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STRENGTHENING INDIA'S PUBLIC HEALTH WORKFORCE: A LANDSCAPE ANALYSIS OF INITIATIVES AND CHALLENGES



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The Health Finance and Governance Project

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Abt Associates Inc. | 4550 Montgomery Avenue, Suite 800 North | Bethesda, Maryland 20814
T:301.347.5000 | F:301.652.3916 | www.abtassociates.com

Broad Branch Associates | Development Alternatives Inc. (DAI) | Futures Institute
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ABBREVIATIONS

ANC	Antenatal Care
ANM	Auxiliary Nurse Midwife
ART	Antiretroviral Therapy
ASHA	Accredited Social Health Activist
AYUSH	Ayurveda, Unani, Siddha, and Homeopathy
BPL	Below Poverty Line
BRMS	Bachelor of Rural Medicine and Surgery
CBR	Community-Based Rehabilitation
CCT	Conditional Cash Transfer
CEmOC	Comprehensive Emergency Obstetric Care
CHC	Community Health Center
CY	Chiranjeevi Yojana
DCE	Discrete Choice Experiment
EmOC	Emergency Obstetric Care
FP	Family Planning
FRU	First Referral Unit
HIT	Health Information Technology
HLEG	High Level Expert Group
HRH	Human Resources For Health
IFPS	Innovations in Family Planning Services
IMR	Infant Mortality Rate
IPHS	Indian Public Health Standards
JSY	Janani Suraksha Yojana
LMIC	Low- and Middle-Income Country
LPS	Low-Performing States
LSAS	Life-Saving Anesthetic Skills
M&E	Monitoring and Evaluation
MDG	Millennium Development Goal
MMR	Maternal Mortality Rate
MO	Medical Officer
MVA	Manual Vacuum Aspiration
NHSRC	National Health Systems Resource Centre
NP	Nurse Practitioner
NRHM	National Rural Health Mission



PA	Physicians' Assistant
PAC	Post-Abortion Care
PBF	Performance-Based Financing
PBI	Performance-Based Incentive
PBP	Performance-Based Payment
PG	Post-Graduate
PGDPHM	Post Graduate Diploma in Public Health Management
PHC	Primary Health Center
PHFI	Public Health Foundation of India
PPP	Public-Private Partnership
RCH	Reproductive and Child Health
RMA	Rural Medical Assistant
RMNCH+A	Reproductive, Maternal, Newborn, Child & Adolescent Health
RMP	Registered Medical Practitioner
RNTCP	Revised National Tuberculosis Control Program
SBA	Skilled-Birth Attendant
UHC	Universal Health Coverage
USAID	United States Agency for International Development
WHO	World Health Organization

EXECUTIVE SUMMARY

Pervasive human resource-related challenges negatively impact the India public health system's ability to achieve health targets. The country's progress on Millennium Development Goals (MDGs) lacks momentum;¹ trends indicate that India will miss, among others, its MDG targets for infant mortality rate (IMR) and maternal mortality rate (MMR) by a considerable margin.² Availability of skilled health workers and their optimal distribution is critical to the achievement of health outcomes such as IMR and MMR.³ The World Health Organization (WHO) regards human resources for health (HRH) as one of the six building blocks⁴ of any national health system. For India's public health system to deliver effectively, it is imperative that policymakers place strategic focus on tackling persistent HRH issues such as chronic shortage of health workers, unbalanced skill mix in the existing health workforce, and inequitable urban-rural distribution of health workers.

Taking optimal health care to the farthest corners of the country is critical to the vision of the Ministry of Health and Family Welfare for comprehensive and integrated health services. The National Rural Health Mission (NRHM) has made substantive efforts to place doctors and other health workers in rural and remote areas through a vast network of health sub-centers, and primary and community health centers. However, persistent shortage and maldistribution of qualified health providers continue to adversely affect the quality and efficiency of public health services, especially in rural areas. According to the World Health Statistics Report (2011), India has only six doctors for a population of 10,000 and 13 nurses and midwives per 10,000,⁵ against WHO's recommendation of a minimum 23 health workers per 10,000⁶ to ensure coverage of essential health services. The distribution of this limited health workforce is overwhelmingly skewed in favor of urban areas. Almost 74% of India's doctors are concentrated in cities, where only 28% of the population resides,⁷ rendering the majority of the rural population (72% of total) unable to access services of trained doctors.

Many strategies have been employed, at both national and state levels, to address HRH shortages and maldistribution. In this landscape analysis we have surveyed these initiatives and approaches to addressing HRH challenges. Our thematic emphasis was based on the recognition that successfully tackling the gamut of HRH issues depends on addressing issues of numeric adequacy, geographic distribution, skill mix, training, management, and motivation of public health care workers in India. To aid focus, we classified the different initiatives under five headings: new public health cadres, task shifting, strategies for retention in rural areas, contracting private health workers (public-private partnerships), and performance-based incentives. For each of these categories, we reviewed the relevant recent studies, reviews, reports, commentaries, policy documents, and papers that were available at the beginning of 2014. This analysis aims to document past and current HRH-improvement interventions, and widely disseminate the most effective of these interventions. We anticipate that this information will be used to inform current and future policy on HRH and provide support to various state governments in replicating proven best practices.

Our literature review suggests that introduction of **new public health cadres** could be an effective long-term solution to the chronic shortage of health workers in some specific areas. A strong case has been made for creating a dedicated public health cadre of multi-disciplinary professionals for managing public health

¹ Nath, Anita. 2011. India's progress toward achieving the millennium development goals. *Indian J Community Med.* 36:85-92.

² Ministry of Statistics and Programme Implementation. 2014. Millennium Development Goals India Country Report 2014. Social Statistics Division, Ministry of Statistics and Programme Implementation, Government of India. Available from: mospi.nic.in/Mospi_New/upload/mdg_2014_28jan14.pdf

³ Rao, Krishna D, Aarushi Bhatnagar, Peter Berman. 2012. So many, yet few: human resources for health in India. *Human Resources for Health* 10:19.

⁴ World Health Organization. 2007. *Everybody's Business: Strengthening Health Systems to Improve Health Outcomes.* WHO.

⁵ World Health Organization. 2011. *World Health Statistics 2011.* Geneva: WHO.

⁶ World Health Organization. 2006. *The world health report 2006: working together for health.* WHO.

⁷ Ministry of Health and Family Welfare. 2006. *Report: Task Force on Medical Education for the National Rural Health Mission.* Ministry of Health and Family Welfare, Government of India.

programs. On the other hand, the idea of creating a separate cadre of rural health practitioners, proposed by the Ministry of Health and Family Welfare in a proposal to institute a Bachelor of Rural Medicine and Surgery (BRMS) degree to exclusively serve the rural population, drew perhaps more opposition than support. While conceding that the move would enhance availability of trained personnel at the primary health center and sub-center level, the proposal was subsequently dropped, primarily on the grounds that having a separate standard of health care for rural India violated citizens' fundamental right to equal treatment, and having a new cadre of "half-baked" rural medical practitioners would dilute the high standards associated with Indian healthcare professionals. Examination of Chhattisgarh state's now-terminated initiative to introduce a cadre of Rural Medical Assistants (RMAs) shows that while such a move could effectively address the scarcity of skilled health workers in rural areas, absence of a robust career path for such cadres and lack of support from established medical bodies could limit the initiative's viability.

Task shifting has been advocated as a proven strategy to address physician scarcity in rural areas. In this context, task shifting usually involves moving (shifting) clinical tasks from higher-level cadres, such as doctors, to capable cadres with fewer credentials. "Non-physician prescribing" has had success in countries both developed and developing. The WHO has also recently recommended task shifting to optimize health worker roles in order to enhance access to key maternal and newborn health interventions.⁸ Initiatives have been taken across the country to train Medical Officers (MOs) in providing comprehensive emergency obstetric care (CEmOC), including cesarean delivery and anesthesia. One successful initiative in this direction has been the Life-Saving Anesthetic Skills (LSAS) training program in Gujarat, which has increased women's access to life-saving anesthetic services during obstetric emergencies. Overall, such initiatives have, however, had mixed results due to issues of poor implementation and monitoring and evaluation (M&E), inadequate attention to career progression, lack of equipment and infrastructure, and inconsistent training quality and supervision. Strong arguments have also been made in favor of amending the existing laws to expand the health workforce cadres authorized to provide post-abortion care (PAC) services such as manual vacuum aspiration (MVA) and administration of PAC-related medications. Similarly, task shifting has been proposed to augment health worker cadres delivering mental health care in primary care settings. Clearly, there is wide support for task shifting, but it must not be treated as a stopgap solution. Instead, in tandem with overall health systems strengthening, task shifting must be integrated into the health system as a cost-effective, preferred strategy to ensure access to health care in underserved areas.

Inadequacy of health workers in rural and remote areas is among the biggest problems confronting India's public health system. Our analysis of the material on **rural retention strategies** pointed to various approaches that have been employed, ranging from compulsory service bonds for medical graduates to monetary incentives, hiring contractual staff, contracting private health workers, and adding additional skills to existing staff. Several Indian states use compulsory rural service bonds and mandatory rural service for preferential admission into post-graduate (PG) programs as a strategy to recruit and retain qualified doctors in rural areas. A case in point is Andhra Pradesh, which has successfully used the scheme of reserving PG seats for public sector doctors serving in rural areas to fill up vacancies in primary health centers, but not without concerns about service quality and mismatch of PG quota with specialist requirements. Considerable research interest has also centered on the motivational issues that influence the choice to serve in rural areas. Although financial incentive has emerged as a motivator, research overwhelmingly favors a "package" of incentives, comprising better salary, enhanced opportunities for PG education, improved infrastructure and living conditions, and clear transfer and promotion policies.

Public-private partnerships (PPPs) represent another set of promising initiatives to ameliorate the poor availability of health workers at public health facilities. Both NRHM and the National Health Policy (2002) have recommended partnerships with private providers and civil society organizations to supplement the public health system. In fact, recognizing the role of the not-for-profit sector (NGOs) in reaching out in remote areas, NRHM's Reconstituted Task Force on Public Private Partnership strongly recommended the creation of an enabling mechanism of a grants-in-aid committee at district, state, and national levels to facilitate the achievement of the NRHM norm of ensuring a minimum 5% expenditure of NRHM budget through NGOs. Several states have been exploring different PPP models, including contracting in of

⁸ WHO Recommendations: Optimizing Health Worker Roles to Improve Access to Key Maternal and Newborn Health Interventions Through Task Shifting. Geneva: World Health Organization; 2012.

specialists for specific tasks and contracting out of services to private health practitioners. A broad view of the research in this area seems to indicate that contracting in providers is less effective than contracting out services, as the former is impeded by inadequate infrastructure, insufficient financial incentives, and poor management capacities of public health administrators.

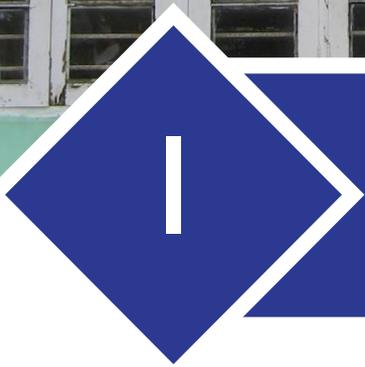
Research on contracting out has largely focused on the success of voucher programs for maternal health services, especially the Chiranjeevi Yojana (CY) in Gujarat. The CY program pays accredited private hospitals a fixed payment for providing free maternity services to women from below-poverty-line (BPL) households. Early studies commended the scheme for increasing institutional delivery among poor women and improving access to treatment for complications and cesareans in remote areas. A more recent investigation of the scheme has, however, questioned these positive findings. Overall, PPPs certainly represent a promising strategy for tapping into the country's large and growing private health sector, but such partnerships must contribute to building a comprehensive and efficient public health system.

The strategy of motivating the health workforce through **performance-based incentives** (PBIs) is another area of considerable interest. Research on this topic in India has largely focused on the safe motherhood program Jananai Suraksha Yojana (JSY), which has provision for incentivizing both the mother (demand-side incentives) and the community health worker/Accredited Social Health Activist (ASHA) (supply-side incentives). Given our focus on HRH issues, we looked more closely at supply-side incentives, paid out to ASHAs for facilitating pregnant women's access to antenatal care, institutional deliveries, and postnatal care. Our review of relevant literature suggests that the PBIs given to ASHAs under JSY play a major role in improving delivery of targeted services, while the likely contribution of many other factors cannot be ruled out. ASHAs have reported the positive impact of incentives on their already-high intrinsic motivation to provide these services. Our review also pointed to some weaknesses in the PBI model for ASHAs, including a mismatch between compensation and expectations, rampant delays in payment, and ambiguity about the payment process. Most importantly, though, the review highlighted the need for more research and data on how incentives affect outcomes.

Based on our landscape analysis of the different initiatives and approaches to addressing HRH challenges, we would share the following broad observations:

- Perhaps no single strategy could alone offer a comprehensive solution. The interventions need to be multi-pronged and implemented alongside concerted efforts toward overall health system strengthening, especially targeted infrastructure improvement.
- International practices need to be contextualized to India to adequately address local issues and concerns.
- Any initiatives to augment the numbers or roles of health workers must secure buy-ins from all stakeholders, institute robust training and capacity building mechanisms, and adequately address the concerns and aspirations, for example of career progression, of the different cadres.
- PPPs need to look beyond the outsourcing model to building more long-term relationships to improve the scalability and sustainability of initiatives.
- The need for strong M&E cannot be overemphasized. Impact evaluations and cost-benefit analysis of HRH initiatives are critical for course-correction to ensure that strategies yield the desired outcomes in terms of coverage, utilization, and quality of service delivery.

Finally, there is a clear need for more rigorous study and examination of the ongoing HRH initiatives. Evidence-based decision-making must be at the core of any health sector reform.



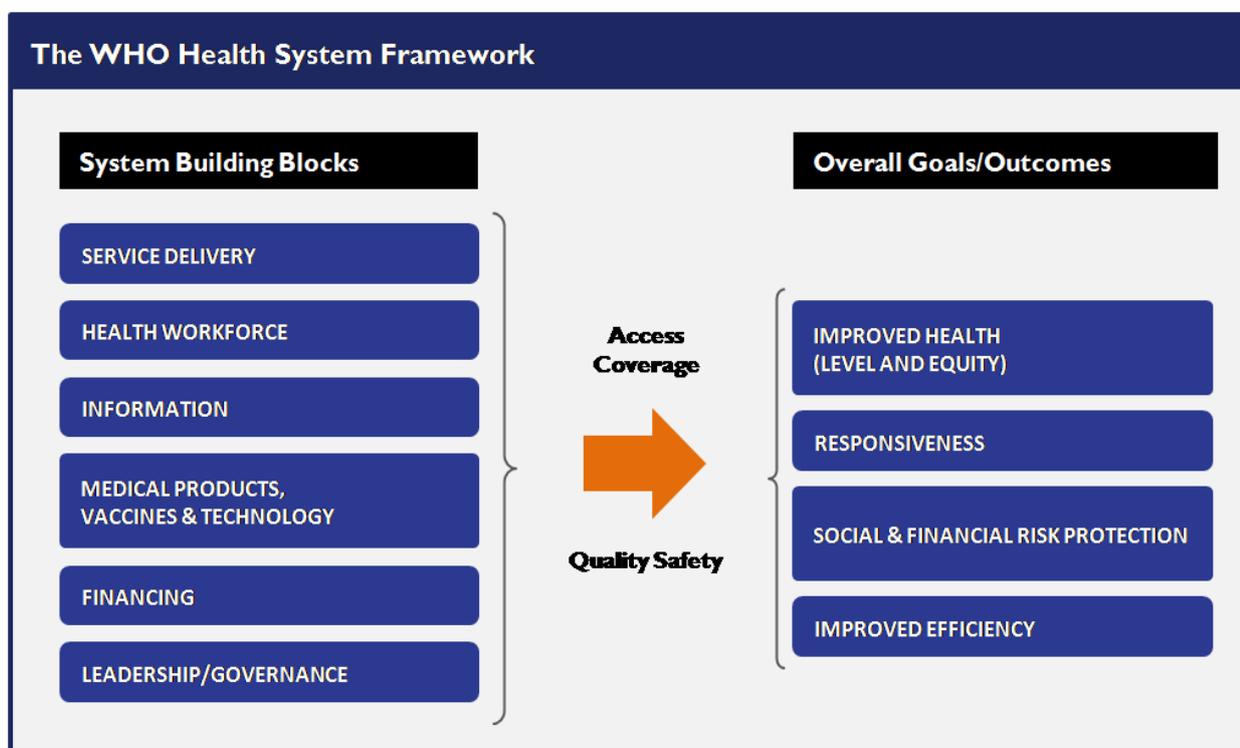
Background: HRH Scenario in India



I. BACKGROUND: HRH SCENARIO IN INDIA

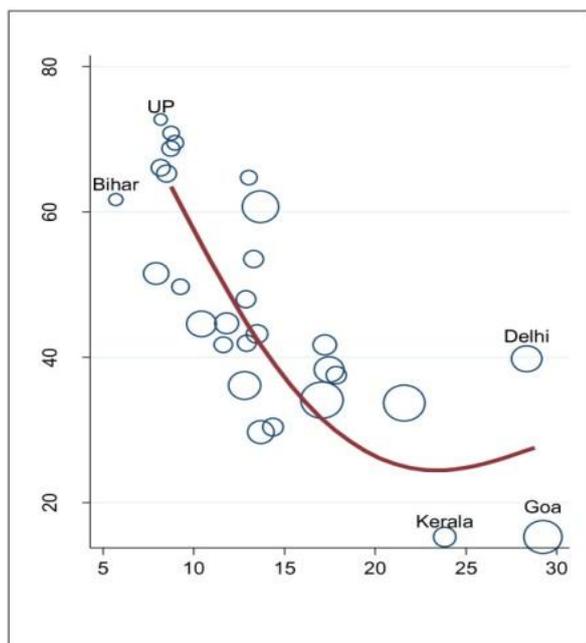
Notwithstanding the impressive economic and technological advances that India has made in the last few decades, the country's record on health-related indicators is well below desirable levels. India's progress toward achieving the Millennium Development Goals has lacked momentum,⁹ with trends indicating that the country would miss, among others, its MDG targets for the infant mortality rate and maternal mortality rate by a significant margin.¹⁰ Human resources for health are one of the World Health Organization's six building blocks¹¹ (see Figure 1) of any national health system, and are critical to a public health system's capacity to achieve national health goals. The availability of health workers and their distribution has a direct impact on health outcomes such as IMR and MMR¹² (see Figure 2). It is well known that critical health indicators like IMR and MMR have a negative correlation with the availability of health workers, and countries with higher density of skilled health personnel also report lower mortality.^{13, 14}

Figure 1: The WHO Health System Framework



⁹ Nath, Anita. 2011. India's progress toward achieving the millennium development goals. *Indian J Community Med.* 36:85-92
¹⁰ Ministry of Statistics and Programme Implementation. 2014. Millennium Development Goals India Country Report 2014. Social Statistics Division, Ministry of Statistics and Programme Implementation, Government of India. Available from: mospi.nic.in/Mospi_New/upload/mdg_2014_28jan14.pdf
¹¹ World Health Organization. 2007. *Everybody's Business: Strengthening Health Systems to Improve Health Outcomes.* WHO.
¹² Rao, Krishna D, Aarushi Bhatnagar, Peter Berman. 2012. So many, yet few: human resources for health in India. *Human Resources for Health* 10:19.
¹³ Sundararaman, Thiagarajan, Garima Gupta. 2011. *Human Resource for Health: The Crisis, the NRHM Response and the Policy Options.* Policy Brief, Institute of Applied Manpower Research, Planning Commission, Government of India.
¹⁴ Speybroeck, Niko, Yohannes Kinfu, Mario R Dal Poz, David B Evans. 2006. *Reassessing the Relationship between Human Resources for Health, Intervention Coverage and Health Outcomes: Evidence and Information for Policy.* World Health Organization.

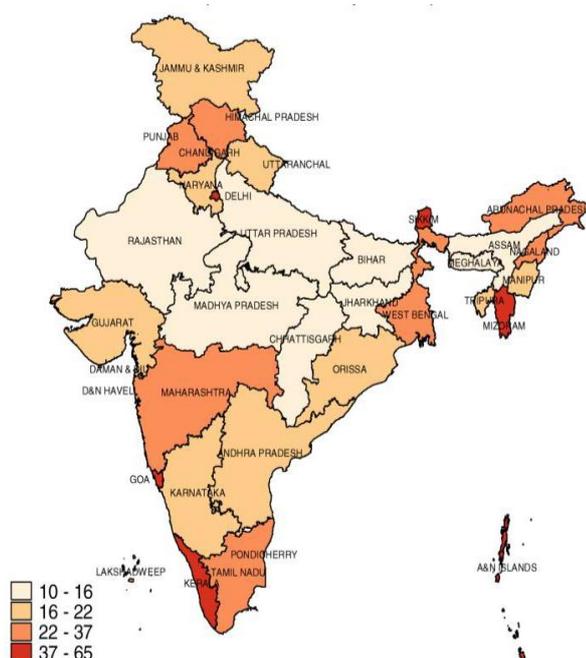
Figure 2: Workforce Density and Infant Mortality



Source: Rao et al. (2012)

India's public health system is struggling with a chronic shortage of health workers, an unbalanced skill mix in the existing staff, and an inequitable urban-rural distribution of health workers. Shortage of health personnel negatively affects the quality and efficiency of public health services and has a direct and distressing bearing on health outcomes. The WHO recommends 23 health workers per 10,000,¹⁵ below which threshold the coverage of essential health services becomes unlikely. The World Health Statistics Report (2011) puts the density of doctors in India at 6 for a population of 10,000 and that of nurses and midwives at 13 per 10,000.¹⁶ With a cumulative figure of 19 health workers for a population of 10,000, India ranks 52nd of the 57 nations grappling with health workforce crisis.¹⁷ Within India as well, the density of health personnel varies across states, largely reflecting the socioeconomic level of a state. The map below illustrates the skewed distribution, with the north-central states tending to fall in the lowest quartile of health worker density.

Figure 3: Statewide Health Worker Density in India (per 10,000 population; 2005)



Source: Census of India 2001

Taking optimal health care to the farthest corners of the country is critical to the Ministry of Health and Family Welfare's vision for comprehensive and integrated health services, especially for children, adolescents, and mothers. Strategic focus on reproductive, maternal, newborn, and child health, and adolescent health (RMNCH+A), is at the heart of the Government of India's flagship National Health Mission program. With its emphasis on equity, universal health care, entitlement, and accountability, the RMNCH+A approach emphasizes the need to take quality health care to the most vulnerable and underserved populations. Given the shift in programming approach for RMNCH+A—from the district to the block to the community level—augmentation of human resources is perhaps one of its most vital elements.

In the last few years the public sector has, especially through the National Rural Health Mission (NRHM), made substantive efforts to place doctors and other health workers in rural areas through its vast network of health sub-centers and primary and community health

centers. Apart from the regular state government vacancies being filled, massive investments have also been made through NRHM to recruit contracted health care providers in service delivery and managerial roles, including doctors, nurses, and paramedics. From NRHM's launch in 2005 to the year 2012, almost 85,368 more doctors and Auxiliary Nurses and Midwives (ANMs) were appointed to the rural public health

¹⁵ World Health Organization. 2006. *The world health report 2006: working together for health*. WHO.

¹⁶ World Health Organization. 2011. *World Health Statistics 2011*. Geneva: WHO.

¹⁷ World Health Organization. 2010. *Global Atlas of the Health Workforce*. Geneva: WHO.

system.¹⁸ Additionally, NRHM's focus on providing every village in the country with a trained female community health activist or accredited social health activist—building a workforce of 850,000¹⁹ ASHAs—has helped women and children in villages access timely health care.

However, the continuing disparity in availability of qualified health providers between cities and villages—along with high attrition, poor motivation, and lack of training—continues to strain the country's public health system and call for greater investment in and better governance of the health sector.

A number of initiatives are being attempted/proposed in India as well, at both national and state levels, to tackle HRH-related issues. This Landscape Analysis surveys former and current initiatives and approaches to address the challenges related to HRH in India. The analysis focuses on:

- New public health cadres
- Task shifting
- Strategies for retention in rural areas
- Contracting private health workers (public-private partnerships)
- Performance-based incentives

¹⁸ Ministry of Health and Family Welfare. 2012. *Rural Health Statistics in India*. Statistics Division, Ministry of Health and Family Welfare, Government of India.

¹⁹ UNICEF. 2013. *Recommendations for Strengthening Skills and Competencies of ASHAs: Consultation Report*. Available from: [http://www.unicef.org/india/asha\(1\).pdf](http://www.unicef.org/india/asha(1).pdf)



2

PURPOSE: OBJECTIVES OF THE LANDSCAPE ANALYSIS

2. PURPOSE: OBJECTIVES OF THE LANDSCAPE ANALYSIS

The purpose of this Landscape Analysis is to document past and current HRH-improvement interventions, and to disseminate widely the most effective of these interventions. The information will be used to inform current and future policy on HRH, and also to provide support to various state governments in replicating proven best practices. The analysis covers research and documentation on HRH-related approaches in the five focus areas listed above (new public health cadres, task shifting, strategies for retention in rural areas, contracting private health workers [public-private partnerships], and performance-based incentives). Special emphasis is given to cadres related to program management and service delivery of reproductive, maternal, newborn, child, and adolescent health, and Revised National Tuberculosis Control Program (RNTCP) services.

The key objectives of the Landscape Analysis are to:

- Systematically find, summarize, and assess the effectiveness of relevant approaches/interventions to address HRH problems in India
- Identify best practices that can be replicated and scaled up
- Document these best practices as guidebooks, manuals, and tools to assist the states that want to replicate them
- Inform political and resource decision-making about best practices in HRH



3

METHODOLOGY

3. METHODOLOGY

The Landscape Analysis starts with a compilation of relevant recent studies, reviews, reports, commentaries, policy documents, and papers that were available at the beginning of 2014. We start with a summary of these documents and papers on former and current approaches to addressing the human resources-related issues impeding the country's public health system.

3.1 Scope

The WHO defines human resources for health, or the health workforce, as “all people engaged in actions whose primary intent is to enhance health.” This stock includes both private and public sector clinical staff such as doctors, nurses, pharmacists, and dentists, as well as management and support staff. For the purposes of this study, we focused only on the public health staff in India, including those cadres related to program management and service delivery of RMNCH+A and RNTCP services. Table I presents a listing of all cadres of health workers in India.

In terms of geographical focus, the analysis covers various HRH initiatives underway or proposed at the national level and in various states across the country. Our thematic emphasis was based on the recognition that successfully addressing the gamut of HRH issues depends on addressing the numeric adequacy, skill mix, training, management, and motivation of public health care workers in India. The analysis covered initiatives in the five predefined areas—new public health cadres, task shifting, strategies for retention in rural areas, contracting private health workers (public-private partnerships), and performance-based incentives.

3.2 Search and Selection

The analysis examined relevant and available research, papers, and other documents in online databases, using a list of health and human resources-related keywords. Potential sources were examined through electronic searches of journals and research outputs of governments, academic centers, and international organizations. Also used were electronic literature indexing services such as the Global Health Directory (WHO) and PloS, and repositories of various national public health institutions such as the Public Health Foundation of India (PHFI), the Global Health Workforce Alliance, National Health Systems Resource Centre (NHSRC), and National Institute of Health and Family Welfare.

We gave priority to documents and papers if their titles and abstracts indicated that they were:

- Published after the year 2000
- Related to an HRH intervention within India
- Related specifically to the public health workforce
- Relevant to an identified strategic area
- Expected to offer specific details on approaches and structures

We searched through electronic databases for information that was current, relevant, and accessible through the Internet, using a combination of the following search terms: human resources for health, HRH, public health, workforce, India, RMNCH+A, RNTCP, health cadres, alternative health cadres, staff, rural health, retention, retaining, rural posting, attrition, motivation, task shifting, role realignment training, service delivery, incentives, contracting, manpower, out-sourcing, contracting-in, health planning, performance-based incentives, pay for performance, output based payment, and result based financing.

Omission of any research, document, or activity from this desk review does not in any way deny its existence, importance, or utility. Also, the review does not claim to be thematically and geographically comprehensive.

Table 1: Health Care Cadres in India

Doctors (allopathic)	Medical graduates who have either an MBBS degree (bachelor's degree in medicine and surgery) or an MBBS degree along with a specialist degree/diploma. The Medical Council of India is acknowledged as the regulatory body for institutions (medical colleges) granting these degrees.
Practitioners of Ayurveda, Yoga, Unani, Siddha, and Homeopathy (AYUSH)	Collectively known as AYUSH doctors, they hold a bachelor's or post-graduate degree in one of the systems of traditional medicine. The Central Council for Indian Medicine or the Central Council for Homeopathy serve as regulatory bodies.
Nurses	Nursing qualifications include a three-and-a-half-year diploma in General Nursing and Midwifery or a four-year bachelor's degree (B.Sc), optionally followed by a two–three year post-graduate degree (M.Sc). They are registered with the Nursing Council of India.
Dentists	This cadre holds a basic bachelor's degree (BDS), which may be followed by post-graduate training (master's degree [MDS]). The Dental Council of India regulates these personnel.
Pharmacists	These personnel hold a bachelor's or master's degree in pharmacy.
Auxiliary Nurses and Midwives	ANMs have a two-year diploma in auxiliary nursing and midwifery.
Community Health Workers	Individuals in this group have undergone at least 10 years of formal education. They are given 23 days of training to perform this function. This broad group includes cadres such as Health Assistants and Health Educators.
Accredited Social Health Activists	NRHM set up ASHAs as a cadre of health volunteers. ASHAs are usually women of ages 25–45 years, residents of the village they work in, and have undergone at least eight years of formal education.
Registered Medical Practitioners (RMPs)	This group includes unlicensed practitioners who mainly practice allopathic medicine. Found in both rural and urban areas, the RMPs have little or no formal medical training.
Traditional healers	This heterogeneous group of traditional healers includes faith healers, herbalists, tantriks, etc.

Source: Rao (2011)²⁰

²⁰ Rao, Krishna D. 2011. Situation Analysis of the Health Workforce in India. Human Resources Background Paper 1. Public Health Foundation of India.
Available from: http://uhc-india.org/uploads/RaoKD_SituationAnalysisoftheHealthWorkforceinIndia.pdf



4

KEY FINDINGS



4. KEY FINDINGS

This section presents the major findings of the Landscape Analysis. The key findings of our research are presented under five sub-sections: new public health cadres, task shifting, strategies for retention in rural areas, contracting private health workers (public-private partnerships), and performance-based incentives.

4.1 New Public Health Cadres

Creation of new public health cadres is seen as an effective long-term solution to the chronic shortage of health workers. These interventions aimed at creating new cadres to take up tasks previously performed by relatively higher-skilled professionals. The literature we reviewed primarily discussed two new types of cadres: a dedicated public health managerial cadre and a new cadre of rural medical practitioners to serve rural areas.

4.1.1 Public Health Managers

Many of the sources we examined made a strong case for **creation of a dedicated public health cadre of multi-disciplinary professionals for managing public health programs** without being burdened with treatment and care services. The Indian Public Health Association has recommended the creation of a specialized cadre of Public Health Managers to efficiently manage the public health system and services. It is seen as critical that India move from implementing narrowly defined vertical health programs to managing an efficient health system at all levels (Babu, 2011).²¹ The Ministry of Health and Welfare's strategy document for RMNCH+A²² also emphasizes the importance of creating this new public health cadre. The Government of India has constituted an expert group to provide necessary assistance to state governments in establishing, training, and mentoring this managerial public health cadre. Several state governments such as Karnataka are already planning to introduce a dedicated cadre of public health managers into their health workforce.

In their policy research paper Das Gupta et al. (2009)²³ draw on the public health system of the southern Indian state of Tamil Nadu for lessons to address the weaknesses of public health systems. In 1952, Tamil Nadu made a policy decision not to amalgamate its medical and public health services. The state has a separate Directorate of Public Health, which is staffed by a cadre of trained public health managers, who are promoted to the Directorate after several years of experience in planning and oversight of public health programs and services in urban and rural areas. These managers are assisted by non-medical specialists (such as entomologists and statisticians) with strong first-hand experience of working on the ground. As separate from the medical cadre, this public health managerial cadre is carefully trained for an administrative and management role rather than a clinical role. This system enables Tamil Nadu to undertake long-term planning and avert disease outbreaks and resurgence; manage endemic diseases, disasters, and emergencies; and support rural and urban local bodies in protecting public health. This model of public health management should be highly replicable, given that it operates within the administrative and fiscal resources available to most states.

Training of in-service health personnel in public health management is also seen as an approach to improve public health practice (Negandhi et al. 2012).²⁴ In 2008, the Government of India launched, under NRHM, a one-year Post Graduate Diploma in Public Health Management (PGDPHM) to train health professionals

²¹ Babu, Giridhara R. 2011. *India's tryst with creation of public health cadre*, Ann Trop Med Public Health. 2011; 4:143-4.

²² Ministry of Health and Welfare. 2013. *RMNCH+A strategic approach document*. Ministry of Health and Welfare, Government of India.

²³ Das Gupta, Monica, BR Desikachari, TV Somanathan, P Padmanaban. 2009. *How to Improve Public Health Systems: Lessons from Tamil Nadu*. Washington DC: The World Bank Policy Research Working Paper 5073.

²⁴ Negandhi, Preeti, Kavya Sharma, Sanjay Zodpey. 2012. *An innovative National Rural Health Mission capacity development initiative for improving public health practice in India*. Indian J Public Health 2012;56:110-5.

already working in public health. One of the program's key features is the NRHM context it emphasizes in course content and pedagogy. The program has received a positive response from in-service professionals and public health institutes across the country, and institutional partnerships have rapidly expanded, as have the number of student enrolments. Between 2008 and 2011, 386 students graduated from the program. The content of the program, designed to cater to NRHM requirements, and the fact that candidates come from within the health system make it highly suited for implementation of various reforms and programs initiated at central and state government levels. Several state governments have begun training nursing professionals in health management. The Government of Madhya Pradesh pioneered this approach by nominating nursing staff for PGDPHM and assuring them suitable placements in the health system after completion of training.

Following their study of national and state governments' public health objectives and relevant literature, Sathyanarayan & Babu (2011)²⁵ propose creation of a specialist public health cadre as well as a robust career progression framework and a public health training program that offers core public health skills and competencies to all public health staff. Additional skill building in specialist areas may be provided to some personnel based on function. Based on the review, the authors also recommend a new network of public health professionals from several departments to allow coordination and mutual support in working closely with the Health Ministry to achieve national health goals.

The idea of a separate cadre has also been raised in the context of WHO's Guidelines for Community-Based Rehabilitation (CBR), launched in 2010, towards achieving the MDGs for persons with disabilities. Mannan et al. (2012)²⁶ conducted a systematic review to evaluate evidence on the effectiveness of alternative cadres for CBR in low- and middle-income countries. Although the research remained inconclusive due to dearth of evidence, it did highlight the need for more CBR interventions and research on alternative cadres in low- and middle-income countries, where the majority of the world's over 650 million persons with disabilities live. The authors called for development of alternative cadres of rehabilitation workers who are trained with an appropriate skill mix to implement CBR guidelines on the ground and focus on integration and empowerment of persons with disabilities.

4.1.2 New Cadre of Rural Health Workers

On the issue of **creating a separate cadre of health practitioners for rural India**, the resources examined for the desk review took contradictory positions. Public health service in rural India is crippled by a scarcity of doctors and trained health care personnel. Seeking to address this scarcity, the Union Ministry of Health and Family Welfare had proposed a three-and-a-half-year Bachelor of Rural Medicine and Surgery degree to exclusively serve the rural population.

The 65th Rajya Sabha Standing Committee Report²⁷ on the proposal detailed how a separate degree course for rural practitioners would provide basic training in clinical examination, medicine, orthopedics, pediatrics, obstetrics and gynecology, general surgery, and public health. The major strength of the BRMS personnel would be their availability at the Primary Health Center (PHC) and sub-center level and their formalized education and training to fill the existing gap in first-level care in rural areas. The states welcomed the proposal, as did many expert voices from the health sector. A separate medical cadre of qualified practitioners for rural areas would not only improve health care in rural, remote, and tribal areas but also lead to improvements in infrastructure by increasing the number of hospitals, schools, medical colleges, etc.

Contradictory voices on the issue of a separate rural health cadre, as reflected in articles by Garg et al. (2011)²⁸ and by Thayyil & Jeeja (2013),²⁹ rejected the idea of creating a new cadre of "half-baked" rural

²⁵ Sathyanarayan, TN, Giridhara R Babu. 2011. *Creating a public health cadre in India: The development of a framework for interprofessional and inter-sector collaboration*. Journal of Interprofessional Care. 2011;25(4):308-10.

²⁶ Mannan, Hasheem, Camille Boostrom, Malcolm MacLachlan, Eilish McAuliffe, Chapal Khasnabis, Neeru Gupta. 2012. *A systematic review of the effectiveness of alternative cadres in community based rehabilitation*. Human Resources for Health. 2012;10(1):20.

²⁷ Rajya Sabha Standing Committee. 2013. *Sixty-fifth Report on the Proposal to Introduce the Bachelor of Science (Community Health) course*. Rajya Sabha, Parliament of India.

²⁸ Garg, Suneela, Ritesh Singh, Manoj Grover. 2011. *Bachelor of Rural Health Care: Do we need another cadre of health practitioners for rural areas*. National Medical Journal of India. 2011 Jan-Feb; 24(1): 35-37.

medical practitioners, primarily on the ground that having two standards of health care in India—one state-of-art for the urban population and a second sub-standard care for rural masses—violated the citizens’ fundamental right to equal treatment. Another major point of contention was that the move to create the BRMS course would dilute the high standards associated with Indian healthcare professionals. There was fear that the BRMS graduates would eventually abandon rural areas and migrate to cities. Training of these rural practitioners was also a major area of concern because the scheme proposed their training at district hospitals, which are already ill-equipped, poorly staffed, and overworked. Instead of BRMS, several argue for bringing overall equity in social development, increasing intake of MBBS graduates, compulsory rural posting for MBBS doctors, and incentivizing service in rural areas.

Garg et al. (2011) also introduced the idea of reviving the licentiate system—preparing a cadre of non-doctors who can conduct limited professional practice. The authors cite that the National Health Policy (2002) and a Task Force on Medical Education (2007) had recommended expanding the pool of general practitioners by including a cadre of licentiates. Such a system, where nurses and medical assistants are managing patients in rural areas, is running successfully in Canada, parts of the U.S., and the U.K. Given the stiff opposition it faced, the proposal to create a cadre of rural medical practitioners through a BRMS degree has been dropped.

In this context, Sharma et al. (2013)³⁰ in their paper propose task shifting and “non-physician prescribing” as viable ways of dealing with physician scarcity in rural areas. In support, the authors mention several cases where non-physician health care providers are managing conditions previously within the strict purview of physicians. For example, nurses are managing antiretroviral therapies (ART) in primary health centers across Africa. More details from the paper are discussed in the next section, where we examine studies and papers that discuss task shifting as an effective approach to deal with HRH issues.

4.1.2.1 RMAs—The Chhattisgarh experience

In 2001, Chhattisgarh introduced a three-and-a-half-year course to produce a cadre of Rural Medical Assistants. The graduates got a diploma, not a degree, in modern and holistic medicine, even though the course was similar in content to the MBBS program. The course was subsequently closed in 2009, with differing voices citing reasons such as haste in implementation, lack of support from medical councils, and absence of a career path for RMAs.

Graduates of this course, numbering 1,263, are currently employed under NRHM at the Primary Health Center (PHC) and Community Health Center (CHC) levels³¹ in the identified underserved districts of Chhattisgarh. The RMAs are serving at many PHCs that earlier had vacancies for Medical Officers. The female RMAs are posted at far-flung CHCs that lacked lady doctors.

Assessment of primary health care providers in Chhattisgarh³²—on parameters of knowledge, attitude, behavior, and practice, including community perception—found RMAs and Medical Officers to be equally competent in managing conditions usually seen in primary care settings. This study supported the claim that in the face of acute scarcity of skilled health workers in rural areas, “clinical care providers with shorter duration of training could be a competent alternative to physicians.”

There are calls to restart the course in Chhattisgarh, and other states, like Assam, are already replicating the model.

²⁹ Thayyil, Jayakrishnan, Mathummal Cherumanalil Jeeja. 2013. *Issues of creating a new cadre of doctors for rural India*. Int J Med Public Health 2013;3:8-11.

³⁰ Sharma, Abhishek, Elissa Ladd, MK Unnikrishnan. 2013. *Healthcare inequity and physician scarcity: Empowering non-physician healthcare*. Economic & Political Weekly, March 30, 2013; XLVIII(13).

³¹ *Way Forward & Implementation Challenges – HLEG Recommendations*. 2012. Principal Secretary Health, Government of Chhattisgarh. Available from: uhc-india.org/downloadpdf.php?link=AjaySinghPSUHC12April.pdf

³² Rao, Krishna D, Garima Gupta, Kamlesh Jain, Aarushi Bhatnagar, Thiagarajan Sundararaman. 2010. *Which doctor is for primary health care? An assessment of primary health care providers in Chhattisgarh, India*. PHFI, New Delhi; NHRSC, New Delhi; SHRC, Chhattisgarh.

Table 2: Summary of Sources Reviewed on the Theme of New Public Health Cadres

S.no.	Source Description	Conclusion
1.	India's tryst with creation of public health cadre Giridhara R Babu. 2011. Ann Trop Med Public Health. 143-44	Need for a dedicated public health cadre by incorporating quality training, a progressive career structure, and recruitment policy to attract talented multi-disciplinary professionals committed to health promotion. Rewarding good performance and offering continuing professional development are necessary.
2.	How to improve public health systems: lessons from Tamil Nadu Das Gupta et al. 2009. The World Bank Policy Research Working Paper 5073	Separation of medical and public health services in Tamil Nadu allows the state to conduct long-term planning to reduce disease exposure and manage endemic diseases, disasters, and emergencies. The system is replicable as it operates within the administrative and fiscal resources available to most states.
3.	RMNCH+A strategic approach document. 2013. Ministry of Health and Welfare, Government of India	Need for a separate public health cadre to support RMNCH+A approach. The Government of India has constituted an expert group to provide necessary assistance to state governments in establishing, training, and mentoring the public health cadre.
4.	An innovative National Rural Health Mission capacity development initiative for improving public health practice in India Negandhi et al. 2012. Indian J Public Health. 56:110-5	Public health services can be improved by training existing in-service health personnel in public health management. Toward this, NRHM has launched a one-year Post Graduate Diploma in Public Health Management (PGDPHM) to train health professionals working in the public health apparatus.
5.	Creating a public health cadre in India: The development of a framework for interprofessional and inter-sector collaboration Sathyanarayan & Babu. 2011. Journal of Interprofessional Care. 25(4):308-10	Need for creation of a specialist public health cadre as well as a public health training program for all staff, a robust career progression framework, and a new system of networking public health professionals for coordination and mutual support.
6.	Report on the Proposal to Introduce the Bachelor of Science (Community Health) course Rajya Sabha Standing Committee 65th report. 2013. Parliament of India	Detailed examination of the wider ramifications of introducing a separate degree course (Bachelor of Rural Health Care, later Bachelor of Science [Community Health] and BRMS) for the delivery of health services to the rural population. The proposal was subsequently dropped.
7.	Bachelor of Rural Health Care: Do we need another cadre of health practitioners for rural areas? Garg et al. 2011. National Medical Journal of India. Jan-Feb 2011; 24(1): 35-37.	Authors argued against creating a separate degree for rural practitioners, as it would dilute the high standards of professional health care in India. Although it would improve health care in rural and remote areas, the degree would produce "half-baked" health care practitioners. Instead, the government could consider reintroducing the licentiate system (a cadre of non-doctors authorized to conduct limited professional practice) and explore ways of better engaging the existing health workers.

S.no.	Source Description	Conclusion
8.	<p>Issues of creating a new cadre of doctors for rural India</p> <p>Thayyil & Jeeja. 2013. Int J Med Public Health. 3:8-11</p>	<p>Creating a new cadre of rural practitioners without improving facilities in the rural areas or without an equitable distribution of resources is unethical. Solution lies in reversing urban-centric planning and bringing equity in social development.</p>
9.	<p>Healthcare Inequity and Physician Scarcity: Empowering Non-Physician Healthcare</p> <p>Sharma et al. 2013. Economic & Political Weekly, 30 March 2013; XLVIII(13)</p>	<p>In the context of opposition to the proposal for a separate cadre of rural medical practitioners, the authors suggest task shifting and “non-physician prescribing” as viable ways of dealing with physician scarcity in rural areas.</p>
10.	<p>A systematic review of the effectiveness of alternative cadres in community based rehabilitation</p> <p>Mannan et al. 2012. Human Resources for Health.10(1):20.</p>	<p>A systematic review to evaluate evidence on the effectiveness of alternative cadres for community-based rehabilitation in low- and middle-income countries yielded no conclusive results due to dearth of evidence. The authors called for more research on and development of alternative cadres of rehabilitation workers who are appropriately skilled to promote integration and empowerment of persons with disabilities, and who contribute toward realizing the MDGs set for this minority.</p>
11.	<p>Which doctor is for primary health care? An assessment of primary health care providers in Chhattisgarh, India</p> <p>Rao et al. 2010. PHFI, New Delhi & NHSRC, New Delhi, SHRC, Chhattisgarh.</p>	<p>An assessment of primary health care providers in Chhattisgarh—on parameters of knowledge, attitude, behavior, and practice, including community perception—found RMAs and Medical Officers to be equally competent in managing conditions usually seen in primary care settings.</p>

4.2 Task Shifting

Given that expanding the workforce through more medical colleges or creating new cadres is a long-term solution and one that is encumbered by its own challenges, task shifting is increasingly being advocated as a strategy to supplement India's health care system and improve coverage and access to services in rural and remote areas. In the context of public health care, task shifting involves redistribution of tasks among the health workforce, where specific tasks are moved (shifted) from one cadre to another. For clinical tasks, this usually includes shifting work from higher-level cadres such as doctors, to capable cadres with fewer credentials. For non-clinical work, task shifting often involves shifting administrative tasks from health workers to managers, administrators, or clerks. The World Health Organization recently recommended task shifting³³ to optimize health worker roles to improve access to key maternal and newborn health interventions. The recommendations also stress the need to develop a conducive regulatory environment and quality assurance mechanisms to ensure sustainability of these interventions.

In context of the recent failure of the Government of India's proposal to create a separate cadre of rural medical practitioners, Sharma et al. (2013)³⁴ argue for task shifting and "non-physician prescribing" as viable ways of dealing with physician scarcity in rural areas. Non-physician providers, the authors emphasize, would not only increase availability and accessibility of health care in rural areas, but also create an empowered second line of health cadres. Non-physician health care providers are already treating patients in developed countries. The U.S. developed the cadres of Nurse Practitioners (NPs) and Physicians' Assistants (PAs) in the 1960s in response to the same challenges that India faces—shortage of primary care medical personnel, especially in rural areas. With training in physical examination, diagnosis and treatment of minor diseases, health promotion, and disease prevention, the NPs and PAs now number approximately 100,000, and play a key role in the U.S. health care system.³⁵ Nurses are being trained for and deployed in expanded roles in developing countries as well. In Botswana and Rwanda, task shifting to nurses was done to scale up and manage adult and pediatric ART treatments, especially in places where provider shortages jeopardized ART rollout (Griensven et al. 2008; Monyatsi et al. 2011). The authors pointed to a few trends that India is witnessing in this direction. One is from Bengaluru's Narayana Hrudayalaya Hospital, which practices task shifting efficiently. A team of professionals helps specialist surgeons conduct the maximum possible surgeries and reduce the price of an average surgery to US\$2,000, around 1/15th of the U.S. cost (*The Economist* 2012).³⁶

Task shifting has a particularly important role to play in maternal and reproductive health. Along with comprehensive health systems strengthening, task shifting may prove vital in achieving Millennium Development Goals 4 and 5 (MDG 4 and 5)—reducing infant and maternal mortality and achieving universal access to reproductive health. Dawson et al. (2013)³⁷ conducted a narrative synthesis of peer-reviewed literature (2000–2011) to provide evidence on the best methods to optimize health worker roles through task shifting or task sharing to address MDG 5. The analysis found that mostly clinical tasks like obstetric surgery and anesthesia were being shifted to or shared among doctors, non-physician clinicians, nurses, and midwives. The authors concluded that shifting/sharing these tasks may contribute to increased access to maternal and reproductive health services without causing loss of performance or patient outcomes. In addition, shifting emergency obstetric care (EmOC) tasks to non-traditional cadres appeared to be cost-effective. However, a number of barriers were noted, including poor staff coordination and preparation, lack of skills, absence and resistance by providers, and shortage of drugs and equipment. There is a clear need to keep a strong focus on health

³³ World Health Organization. 2012. *Recommendations: Optimizing health worker roles to improve access to key maternal and newborn health interventions through task shifting*. Geneva: WHO.

³⁴ Sharma, Abhishek, Elissa Ladd, MK Unnikrishnan. 2013. *Healthcare inequity and physician scarcity: Empowering non-physician healthcare*. *Economic & Political Weekly*, March 30, 2013; XLVIII(13).

³⁵ Agency for Healthcare Research and Quality. 2010. *The Number of Nurse Practitioners and Physician Assistants Practicing Primary Care in the United States*. Primary Care Workforce Facts and Stats No. 2. Agency for Healthcare Research and Quality. 12-P001-3-EF.

³⁶ *The Economist*. June 2, 2012. *The future of medicine: Squeezing out the doctor*. Available from: <http://www.economist.com/node/21556227>

³⁷ Dawson, Angela J, James Buchan, Christine Duffield, Caroline SE Homer, Kumudu Wijewardena. 2013. *Task shifting and sharing in maternal and reproductive health in low-income countries: a narrative synthesis of current evidence*. *Health Policy and Planning*, 2013;1–13.

systems strengthening, while also attending to issues such as in-service training, supervision, career progression, and incentives.

In India, although the role of health workers has expanded over the years, secondary care has continued to be the responsibility of doctors and specialists. Shortfall of comprehensive emergency obstetric care providers in rural areas is an important contributory factor to the disparity between urban and rural maternal mortality—267 and 619 maternal deaths per 100,000 live births respectively³⁸ (1999 statistics). Until very recently, India did not consider using task shifting to improve the availability of EmOC services, as only specialist doctors were trained and authorized to perform life-saving obstetric procedures.

Recognizing the scarcity of CEmOC providers and presence of a large number of Medical Officers in rural areas, the Government of India, together with the Federation of Obstetric and Gynecological Societies of India and with technical assistance from the Johns Hopkins Program for International Education in Gynecology and Obstetrics, in 2006 instituted a 16-week CEmOC training program for 18 MOs. This training program was based on an earlier pilot project (2004–2006), where 17 MOs from Gujarat and Rajasthan were given a 16-week training course to provide CEmOC. Evans et al. (2009)³⁹ undertook an evaluation study of the pilot project to determine whether the training enabled facilities to provide CEmOC, and to identify lessons to inform national scale-up of the program. After the pilot training, six CEmOC-trained MOs from Gujarat had performed 134 verified cesarean deliveries at their facilities in the 15–22 months since completing the training. Four CEmOC-trained MOs reported (unverified) 91 additional cesarean deliveries. Eight of the 18 trainees never performed cesarean deliveries after the training. The number of CEmOC-trained MOs doing cesareans subsequently declined, and during a later assessment only three of the six trained had performed any in the six months preceding the site assessment.

A further investigation revealed that, although MOs could be trained to provide CEmOC (including cesarean delivery), a variety of factors hindered their ability to provide it continuously. These included lack of anesthetists, equipment, and infrastructure; inconsistent training quality; selection of inappropriate candidates; and inadequate supervisory support. The Evans study pointed to unavailability of anesthetist's services as the single biggest obstacle for improving MMR. India faces a major shortage of anesthetists: of the total, most work in urban areas in the private sector (only 10% of CHCs in India have anesthetists).⁴⁰ In non-urban areas, some states have only one to six anesthetists per district (population of 1–2 million), and many of them work at district hospitals, leaving few to service CHCs.⁴¹

Mavalankar & Sriram (2009)⁴² reviewed the literature on task shifting anesthesia to mid-level providers and documented the existing programs in South Asia. The practice, long in favor (since 1909), has been used in more than 100 countries.^{43,44} The WHO and the World Federation of Societies of Anesthesiologists endorse the practice, stating that health workers trained for one to two years in anesthesia can safely administer anesthesia.⁴⁵ The authors found that while task shifting of anesthesia services had expanded coverage and access to care in South Asia, most programs had not been systematically implemented as part of an overall HRH strategy. Looking at task shifting of anesthesia services in India, Mavalankar & Sriram (2009) found that the anesthesia training programs for MBBS doctors, initiated after the Child Survival and Safe Motherhood program (1992–1996) recognized the scarcity of anesthetists in rural areas as a major hurdle in operationalization of CEmOC services, failed primarily due to implementation issues. In 2006, Gujarat became India's first state to

³⁸ Ministry of Health and Family Welfare. 2006. *RCH Phase II: National program implementation plan*. Ministry of Health and Family Welfare, Government of India.

³⁹ Evans, Cherrie Lynn, Deborah Maine, Lois McCloskey, Frank G. Feeley, Harshad Sanghvi. 2009. *Where there is no obstetrician - increasing capacity for emergency obstetric care in rural India: an evaluation of a pilot program to train general doctors*. *International Journal of Gynecology & Obstetrics*. 2009;107(3):277-282.

⁴⁰ International Institute for Population Sciences. *India Facility Survey: Phase I*. 1999; 2001:27–56.

⁴¹ Mavalankar, Dileep. 2001. *Policy Barriers Preventing Access to Emergency Obstetric Care in Rural India*. Working Paper Series. Ahmedabad: Indian Institute of Management.

⁴² Mavalankar, Dileep, Veena Sriram. 2009. *Provision of anaesthesia services for emergency obstetric care through task shifting in South Asia*. *Reprod Health Matters*. 2009;17:21–31.

⁴³ McAuliffe Maura S, Beverley Henry. 1996. *Countries where anesthesia is administered by nurses*. *Journal of American Association of Nurse Anesthetists* 1996;64(5): 469–79.

⁴⁴ American Association of Nurse Anesthetists. *History of Nurse Anesthetist Practice*. Available from: www.aana.com

⁴⁵ Dobson, Michael B. 2000. *Anaesthesia at the District Hospital*. 2nd ed. Geneva: WHO.

implement the Life-Saving Anesthetic Skills (LSAS) program on a larger scale following the Government of India guidelines.⁴⁶ LSAS training has since been expanded to almost all the states in the country under the NRHM program. The authors recommend a comprehensive approach to task shifting anesthesia services, calling for legal and political support: support from professional bodies, licensing and registration, competency-based training, monitoring and evaluation (M&E), career progression, and job clarity.

Box 1: Strategies on the Ground—Gujarat

LSAS—The Gujarat experience

Recognizing the need to address anesthetist scarcity in rural areas, in 2002 the Government of India developed a 17-week Life-Saving Anesthetic Skills program to train general Medical Officers (MOs, doctors with a 5-year MBBS degree) to provide anesthesia services to EmOC providers. By 2008, 21 states across India had implemented the LSAS program.

Gujarat was among the first states in India to implement LSAS training. Following an initial pilot of the training with doctors from Chhattisgarh, Gujarat developed its own 18-week program based on GOI guidelines. Gujarat's LSAS training program has two parts: 12 weeks at a medical college learning anesthesia theory and resuscitation skills and practical experience, followed by six weeks in a district hospital for further practical training. Both parts are supervised by experienced trainers, and resuscitation is emphasized throughout the training. For both LSAS and EmOC training programs for MOs, the state government appointed a focal person to arrange training of trainers and provide materials to medical colleges to ensure standardized trainings. The first cohort of MOs started training in February 2006. Since 2006, 51 LSAS-trained medical officers have been placed at first referral units across the state.

Mavalankar et al. (2009) evaluated the trained MOs' experience of the program and identified the factors affecting post-training performance. The sample comprised performing and nonperforming LSAS-trained MOs from across Gujarat. The state's LSAS training program has been a key initiative and has increased women's access to life-saving anesthetic services during obstetric emergencies, enabling several FRUs in the state to function as CEmOC facilities. The focus on resuscitation skills is helping trained MOs save lives in non-obstetric emergencies by resuscitating and stabilizing the mother before transfer to higher-level referral facilities. The study did, however, make some important observations, which will help the state maximize the program's impact.

The authors emphasized the need for longer training duration, structured and clear job descriptions, equipment and blood storage and banking facilities, improving MOs' understanding of their legal protections, and having a separate team of program managers to plan, monitor, and address issues reported by MOs.

In resource-constrained countries such as India where abortion-related mortality is high and health infrastructure inadequate, medical post-abortion care could greatly improve women's health outcomes. Use of misoprostol for PAC is safe and effective;^{47,48,49} the Drug Controller of India approved its use in 2002.⁵⁰ In their study, Patel et al. (2009)⁵¹ examined the environment for mid-level workers to participate in the provision of misoprostol in Bihar and Jharkhand. The sample came from a 2004 survey of health facilities and their staff in the two states, and comprised mid-level providers, obstetrician-gynecologists, and general physicians. The study

⁴⁶ Ministry of Health and Family Welfare. 2002. *Operational Plan for Training MBBS Doctors for Life Saving Anesthetic Skills*. New Delhi: Ministry of Health and Family Welfare, Government of India. Available from: http://mohfw.nic.in/NRHM/MH/Life_saving_Obstetric_Care_Log_Book_for_Trainers.pdf

⁴⁷ Coyaji, K. 2000. *Early medical abortion in India: three studies and their implications for abortion services*. *Journal of American Medical Women's Association* 2000;55(3 Suppl):191–94.

⁴⁸ Elul, Batya, Charlotte Ellertson, Beverly Winikoff, Kurus Coyaji. 1999. *Side effects of mifepristone-misoprostol abortion versus surgical abortion. Data from a trial in China, Cuba, and India*. *Contraception* 1999;59(2):107–14.

⁴⁹ Henderson, JT, AC Hwang, CC Harper, FH Stewart. 2005. *Safety of mifepristone abortions in clinical use*. *Contraception* 2005;72(3):175–78.

⁵⁰ Elul, Batya, Nozer Sheriar, Abhijeet Anand, Neena Philip. 2006. *Are obstetrician-gynaecologists in India aware of and providing medical abortion?* *Journal of Obstetrics and Gynaecology of India* 2006;56(4):340–45.

⁵¹ Patel, Lisa, Trude A Bennett, Carolyn Tucker Halpern, Heidi Bart Johnston, Chirayath M Suchindran. 2009. *Support for provision of early medical abortion by mid-level providers in Bihar and Jharkhand, India*. *Reprod Health Matters*. 2009;17(33):70–79.

found an enabling environment for training and authorizing mid-level providers to provide misoprostol. The authors argue that policymakers should leverage the overall supportive environment and expand the cadres who can legally provide PAC services in rural India.

In the context of task shifting for PAC services, Jejeebhoy et al. (2011)⁵² explored the possibility of task shifting manual vacuum aspiration to nursing cadres in India. They conducted a prospective, two-sided equivalence study at five NGO-run facilities in Bihar and Jharkhand to compare the efficacy and safety rates for MVA provided by newly trained nurses versus that provided by physicians. In India, although NRHM has enabled significant task shifting and permitted nurses to conduct normal deliveries and pelvic examinations and insert intrauterine devices, MVA is still the domain of obstetricians-gynecologists and certified physicians, which severely restricts access to PAC in rural areas. Notably, nurses in India undergo a three-year diploma or a four-year degree program, with the curriculum covering gynecology and obstetrics.

For their study, Jejeebhoy et al. (2011) chose 20 providers—10 non-certified physicians and 10 nurses. All selected providers were given identical Government of India-stipulated MVA training for 12 days, followed by a one-week field placement. The study providers gave MVA care to all the PAC clients who consented to participate in the study. The study found nurses to be as skilled as physicians in performing MVA with safety and effectiveness. The investigators found an insignificant difference on most indicators, including patient satisfaction, and no difference on some. The overall failure and complication rates were low and equivalent between the two provider types. The authors argued for amending the existing laws to expand the health workforce cadres authorized to provide MVA and increase rural women's access to PAC services.

Our review of literature on task shifting included efforts to augment health worker cadres attending to mental health needs at primary level. Kakuma et al. (2011)⁵³ undertook a study of the current state of human resources for mental health, needs, and strategies for action. Pointing to the increasing shortage of skilled mental health workers in low- and middle-income countries (LMICs), the authors found evidence suggesting that community-based programs and task shifting approaches could effectively deliver mental health care in primary health care settings. Brief training and supervision by mental health specialists could enable non-specialist health professionals, lay workers, affected individuals, and caregivers to detect, diagnose, treat, and monitor individuals with mental disorders. Although an effective solution, task shifting in this area would require significant investment, an innovative approach, and effective leadership.

Patel et al. (2010)⁵⁴ conducted a cluster randomized controlled trial called MANAS (short for Manashanti Sudhar Shodh, meaning “project to promote mental health” in Konkani) in primary care of patients with depression and/or anxiety in Goa. The study tested the efficacy of a collaborative stepped-care intervention led by lay health counselors in improving outcomes for people suffering from common mental disorders. Both public and private facilities were included in the trial. The lay health counselors, after a structured two-month training course, provided case management and psychosocial interventions, working in collaboration with the primary care physician, who gave antidepressant drugs, and the mental health specialist, who provided supervision. The results of the MANAS trial indicate that a collaborative-stepped care intervention delivered by trained lay health counselors can improve recovery rates for patients with common mental disorders at primary public health facilities, but not in primary private care settings. Buttorff et al. (2012)⁵⁵ conducted an economic evaluation of the task shifting intervention tested by MANAS in Goa. The use of lay workers (task shifting) in public facilities proved to be both cost-effective and cost-saving. In the private facilities, the effectiveness and costs recorded for the intervention arm and the control arm were similar.

⁵² Jejeebhoy, Shireen J, Shveta Kalyanwala, AJ Francis Xavier, Rajesh Kumar, Shuchita Mundle, Jaydeep Tank, Rajib Acharya, Nita Jha. 2011. *Can nurses perform manual vacuum aspiration (MVA) as safely and effectively as physicians? Evidence from India.* *Contraception*, 2011, 84(6):615-621.

⁵³ Kakuma, Ritsuko, Harry Minas, Nadja van Ginneken, Mario R Dal Poz, Keshav Desiraju, Jodi E Morris. 2011. *Human resources for mental health care: current situation and strategies for action.* *Lancet*. 378 (9803) 1654-1663.

⁵⁴ Patel, Vikram, Helen A Weiss, Neerja Chowdhary, Smita Naik, Sulochana Pednekar, Sudipto Chatterjee. 2010. *Effectiveness of an intervention led by lay health counsellors for depressive and anxiety disorders in primary care in Goa, India (MANAS): a cluster randomised controlled trial.* *Lancet*. 376:2086-95.

⁵⁵ Buttorff, Christine, Rebecca S Hock, Helen A Weiss, Smita Naik, Ricardo Araya, Betty R Kirkwood, Daniel Chisholm, Vikram Patel. 2012. *Economic evaluation of a task-shifting intervention for common mental disorders in India.* *Bulletin of the World Health Organization*. Nov 1; 90(11):813-21.

In their paper Balaji et al. (2012)⁵⁶ describe the development of a lay health worker-delivered community-based intervention for care of schizophrenia in LMICs. The authors reviewed literature on schizophrenia prevalence and treatment gaps in LMICs, evidence for community-based treatment, and the intervention components. The authors then evaluated the acceptability and feasibility of a lay health worker-delivered community-based intervention. The study involved formative case studies with individuals with schizophrenia and their primary caregivers, and piloted its delivery with 30 families at sites in Goa, Maharashtra, and Tamil Nadu. The intervention comprised five components: psycho-education, adherence management, rehabilitation, referral to community agencies, and health promotion, all to be delivered by trained lay health workers supervised by specialists. Following formative and pilot work, new components were added to address stigma, the collaborative nature of service provision was strengthened, and a multi-level supervision system was developed.

While examining task shifting as a measure to reduce the barriers posed by shortage of skilled health professionals, the various resources we reviewed strongly favored the use of task shifting not as a stop-gap solution, but as one that must be integrated into the health system as a cost-effective, preferred strategy to ensure access to health care in underserved areas.

Table 3: Summary of Sources Reviewed on the Theme of Task Shifting

S.no.	Source Description	Conclusion
1.	Healthcare Inequity and Physician Scarcity: Empowering Non-Physician Healthcare Sharma et al. 2013. Economic & Political Weekly, 30 March 2013; XLVIII (13).	Need to adopt task shifting and non-physician prescribing as viable ways of dealing with physician scarcity in rural areas. Non-physician health care providers would not only increase availability and accessibility to health care in rural areas, but also create an empowered second line of health cadres.
2.	Task shifting and sharing in maternal and reproductive health in low-income countries: a narrative synthesis of current evidence Dawson et al. Health Policy and Planning, 2013;1–13.	Task shifting may increase access to and availability of maternal and reproductive health services. Shifting obstetric surgery, anesthesia, and abortion tasks may not compromise performance or patient outcomes and may be cost-effective. Need to continue focus on health systems strengthening and address issues like in-service training, supervision, career progression, and incentives.
3.	Where there is no obstetrician - increasing capacity for emergency obstetric care in rural India: an evaluation of a pilot program to train general doctors Evans et al. International Journal of Gynecology & Obstetrics. 2009; 107(3):277-282	Evaluation of a pilot project (2004–2006), where 17 Medical Officers from Gujarat and Rajasthan were given 16-week training to provide CEmOC, found that general MOs could be trained to provide CEmOC (including cesarean delivery). However, lack of anesthetists, equipment, and infrastructure; insufficient training for cesarean delivery; and inadequate support hindered provision of continued CEmOC.
4.	Provision of anaesthesia services for emergency obstetric care through task shifting in South Asia Mavalankar & Sriram Reprod Health Matters. 2009;17:21–31.	Although task shifting of anesthesia services has expanded coverage and access to care in South Asia, most programs have not been systematically implemented as part of an overall HRH strategy. There is need for a comprehensive approach, including legal and political support, support from professional bodies, licensing and registration, competency-based training, M&E, career progression, and job clarity.

⁵⁶ Balaji, Madhumitha, Sudipto Chatterjee, Mirja Koschorke, Thara Rangaswamy, Animish Chavan, Hamid Dabholkar, Vikram Patel. 2012. *The development of a lay health worker delivered collaborative community based intervention for people with schizophrenia in India*. BioMed Central: The Open Access Publisher.

S.no.	Source Description	Conclusion
5.	Where there is no anaesthetist - increasing capacity for emergency obstetric care in rural India: an evaluation of a pilot program to train general doctors (Box 1) Mavalankar et al. Int J Gynecol Obstet. 2009;107:283–8.	The life-saving anesthetic skills training program in Gujarat is a key initiative and has increased women's access to life-saving anesthetic services during obstetric emergencies. There is, however, need for further strengthening of training, ensuring support from EmOC providers, structured and clear job descriptions, equipment and facilities, improving MOs' understanding of legal protections, and having a separate team of program managers to plan, monitor, and address issues reported by MOs.
6.	Support for provision of early medical abortion by mid-level providers in Bihar and Jharkhand, India Patel et al. Reprod Health Matters. 2009;17(33):70–79	The study found an enabling environment for training and authorizing mid-level providers to provide post-abortion care services by administering approved medication. A majority of mid-level providers showed interest in receiving training to provide PAC. A majority of the surveyed general physicians, especially from the public sector, were supportive of mid-level providers' offering PAC, but most obstetrician-gynecologists were not.
7.	Can nurses perform manual vacuum aspiration (MVA) as safely and effectively as physicians? Evidence from India Jejeebhoy et al. Contraception, 2011, 84(6):615-621.	Trained nurses were found to be as skilled as physicians in assessing gestational age, performing manual vacuum aspiration with safety and effectiveness, and obtaining patient compliance. Women who received the service were overwhelmingly satisfied with the services received (98%) irrespective of provider type.
8.	Human resources for mental health care: current situation and strategies for action Kakuma et al. Lancet (2011) 378 (9803) 1654-1663. [DOI: 10.1016/S0140-6736(11)61093-3]	A study of the current state of human resources for mental health, needs, and strategies for action found that mental health care can be delivered effectively in primary health care settings through community-based programs and task shifting approaches, and that this approach could address the increasing shortage of skilled mental health workers in low- and middle-income countries.
9.	Effectiveness of an intervention led by lay health counsellors for depressive and anxiety disorders in primary care in Goa, India (MANAS): a cluster randomised controlled trial Patel et al. Lancet 2010;376:2086-95.	A cluster randomized controlled trial in Goa showed that a collaborative stepped-care intervention led by trained lay health counselors improved recovery rates for patients with common mental disorders at public primary health facilities, but not in private primary care settings.
10.	Economic evaluation of a task-shifting intervention for common mental disorders in India Buttorff et al. Bulletin of the World Health Organization. 2012 Nov 1; 90(11):813-21.	Economic evaluation of a lay health counselor-led intervention for people afflicted by common mental disorders found the intervention to be both cost-effective and cost-saving in public primary care settings.
11.	The development of a lay health worker delivered collaborative community based intervention for people with schizophrenia in India Balaji et al. 2012. BioMed Central: The Open Access Publisher	Development of a lay health worker-delivered community-based intervention for care for schizophrenia in low- and middle-income countries; the acceptability and feasibility of this package of care was tested through formative case studies with individuals with schizophrenia and their primary caregivers, and piloted with 30 families at sites in Goa, Maharashtra, and Tamil Nadu.

4.3 Strategies for Retention in Rural Areas

The High Level Expert Group (HLEG) constituted by the Planning Commission of India in 2010 to develop a framework for universal health coverage (UHC) noted the need for “appropriately trained and adequately supported practitioners and providers with relevant expertise to be located close to people, particularly in marginalized communities.”⁵⁷ The inadequacy of the health workforce in rural and remote areas is among the biggest of problems confronting the country’s public health system.

The government has, through NRHM, made considerable efforts to place doctors and other health workers in rural areas through a vast network of health sub-centers, PHCs, and CHCs. However, primary care facilities continue to report shortfalls and vacancies (see Table 4 for an example) due to the overall shortage of skilled health workers and reluctance of health personnel to work in rural areas, reflected in the appointed health workers not taking up posts, absenteeism,⁵⁸ and dual practice.⁵⁹ One study reported absenteeism among primary care workers in India at a shocking 40%—the highest in the world (World Bank 2008).⁶⁰

Table 4: Shortfall of Obstetricians/Gynecologists and Pediatricians in CHCs across India (NRHM 2011)

Specialty	Required (R)	Sanctioned (S)	In position (P)	Vacancy (S-P)	Shortfall (R-P)
Ob/Gyn	4,809	1,958	1,389	915	2,682
Pediatricians	4,809	1,731	1,041	849	3,029

Source: Bajpai et al. (2013)⁶¹

Retention of health workers, especially doctors, at rural health care facilities has been a topic of much research and writing. Most of the available literature we analyzed explored the varied strategies to promote rural retention and the motivation of health personnel to work in rural areas.

In their report, following a systematic desk review of all state Program Implementation Plans for 2008–2009 and 2009–2010, Gupta et al. (2011)⁶² described the various human resource initiatives adopted by states in India to recruit and retain health workers in rural and difficult areas. The authors classified the different retention strategies being adopted across India into five major categories:

1. Regulatory measures—making rural service mandatory for medical graduates, linking admission into post-graduate specialization program with rural service, and recruiting health workers from rural areas
2. Monetary compensation—providing financial incentives for rural postings

⁵⁷ The Planning Commission of India. 2011. *High Level Expert Group Report on Universal Health Coverage for India*. Available from: planningcommission.nic.in/reports/genrep/rep_uhc0812.pdf

⁵⁸ Muralidharan, Karthik, Nazmul Chaudhury, Jeffrey Hammer, Michael Kremer, Halsey Rogers. 2011. *Is there a doctor in the house? Medical worker absence in India*. Working Paper.

⁵⁹ Asia Pacific Observatory on Health Systems and Policies. 2013. *Dual practice by health workers in south and east Asia: impacts and policy options*. Policy Brief 2(1).

⁶⁰ The World Bank. 2008. *Global Monitoring Report 2008: Agenda for Inclusive and Sustainable Development*. Available from: <https://www.imf.org/external/pubs/ft/gmr/2008/eng/gmr.pdf>

⁶¹ Bajpai, Nirupam, Ravindra Dholakia, Jyothi Vynatheya. 2013. *Increasing the Availability of Specialist Services in Rural India*. Submitted to UNICEF India and International Advisory Panel to NRHM, Ministry of Health and Family Welfare, New Delhi. Available from: [WP8_UNICEF_III_Specialist_Services_Fec2013.pdf](http://www.unicef.org/india/files/WP8_UNICEF_III_Specialist_Services_Fec2013.pdf)

⁶² Gupta, Garima, Thiagarajan Sundararaman, Krishan D Rao. 2011. *Human Resources for Health in India: Strategies for Increasing the Availability of Qualified Health Workers in Underserved Areas*. PHFI and NRHM. New Delhi.

3. Workforce management—hiring contractual workers and employing retired doctors and nurses
4. Public-private partnerships—engaging with non-government providers to strengthen public services by hiring their services on a contractual basis, directly purchasing services from the private sector (for example, for institutional deliveries), and, less frequently, handing over management of government health facilities to private agencies
5. Multi-skilling and task shifting—adding to the skill set of the existing staff to take on new roles, and shifting tasks to non-physician clinicians to address shortage of specialists

Sundararaman & Gupta (2011)⁶³ have presented a similar categorization of retention strategies and analyzed the initiatives taken under NRHM to address the lack of skilled service providers in rural areas. They pointed to the likely effectiveness of educational strategies of preferentially drawing students for medical and nursing education from those who are willing to work in underserved areas. One example of such a strategy is the Madhya Pradesh's Swavalamban Yojana (self-reliance plan), where rural women from underserved districts are sponsored for nursing courses to address a shortage of staff nurses. The authors also highlighted the introduction of alternative service providers, such as RMAs in Chhattisgarh, and community health workers, such as ASHAs, as a promising approach for bolstering the health workforce in rural areas.

A common approach before NRHM (2005) entailed regulating and enforcing rural postings through compulsory rural service bonds and mandatory rural service for preferential admission into PG programs⁺. Eleven states have made it compulsory for all the medical graduates to serve in rural areas for a duration varying from 1 to 5 years. Eleven states have made it mandatory for all the graduates to complete 2–3 years of rural service for admission to PG degree programs (Gupta et al. 2011). However, a recent move by the Medical Council of India to make 1-year rural posting at PHCs compulsory for MBBS graduates seeking admission into PG programs met with widespread opposition from doctors and students, and had to be dropped.⁶⁴

Looking to assess the effectiveness of compulsory programs for recruiting health workers in rural areas, Frehywot et al. (2010)⁶⁵ examined compulsory service programs from 70 countries. The authors pointed out that these programs were seen, at the policy level, as an “instrument of social justice, an exercise in health equity” and indeed had an impact on availability of health care in underserved areas. For example, in Puerto Rico, 16 of 78 municipalities had no physician before compulsory service. After its implementation, all 78 municipalities had at least one doctor.⁶⁶ The authors suggest that to ensure better buy-in from health professionals and increase effectiveness of compulsory service programs, there is a need for prospective and proactive planning, transparency and clarity in communicating the compulsory program's rationale and expectations to health professionals, and ensuring support during assignments.

⁶³ Sundararaman, Thiagarajan, Garima Gupta. 2011. *Indian approaches to retaining skilled health workers in rural areas*. Bulletin of the World Health Organization. 89(1):73-77.

⁺ Usually a bond is signed, and the doctor can opt out of rural service by paying a penalty equivalent to the bond amount. According to the NHSRC, in Tamil Nadu and Kerala, for example, graduates from PG degrees must serve in rural areas for 5 years if graduating from a government college and 3 years if graduating from a private medical college, against a bond of INR 5 lakhs (US\$8,380). (Source: Bajpai, Nirupam, Ravindra Dholakia, Jyothi Vynatheya. 2013. *Increasing the Availability of Specialist Services in Rural India*. Available from: WWP8_UNICEF III_Specialist_Services_Fec2013.pdf)

⁶⁴ The New Indian Express. February 14, 2014. *Rural posting not mandatory after MBBS*. Available from: <http://www.newindianexpress.com/nation/Rural-Posting-not-Mandatory-after-MBBS/2014/02/14/article2055635.ece>

⁶⁵ Frehywot, Seble, Fitzhugh Mullan, Perry W Payne, Heather Ross. 2010. *Compulsory service programmes for recruiting health workers in remote and rural areas: do they work?* Bull World Health Organ 2010;88:364-370.

⁶⁶ de Arellano AB, Ramirez. 1981. *A health “draft”: compulsory health service in Puerto Rico*. J Public Health Policy.2:70–4.

Box 2: Strategies on the Ground—Andhra Pradesh

Post-Graduate Seat Reservation—The Andhra Pradesh[#] Experience

States in India have adopted a range of strategies to recruit and retain qualified doctors in rural areas. The regulatory measure of reserving post-graduate seats for public sector doctors serving in rural areas is one such strategy. Given the medical graduates' strong desire to become specialists, ease of admission into a PG program becomes a particularly powerful incentive. A number of states in India, including Andhra Pradesh, have this scheme in place.

In their study Shroff et al. (2013) examined the PG reservation scheme in Andhra Pradesh to understand its role in improving rural recruitment of doctors and specialists, the challenges the scheme faces, and how it could be strengthened. The in-service PG reservation scheme has been running in the state for a long time. Many senior Medical Officers in the state health department had benefited from this scheme. The attraction of this scheme has not waned over the years, as the spurt in MBBS seats (an increase from 2,900 in the year 2000 to 4,800 at the time of the study) has not been matched by a commensurate increase in PG seats (only 2,000 PG seats, against 4,800 MBBS seats). This has resulted in intense competition for PG seats. The state government has advantageously used this scenario to draw recruits for MO positions in rural areas.

To be eligible for the scheme, an in-service public sector doctor (MO) must complete continuous regular service of at least 2 years in a tribal area, 3 years in a rural area, or 5 years continuous regular service with the government. While the eligible MOs take the PG entrance exam, they compete only with other eligible MOs for the reserved seats. The percentage of seats reserved for in-service candidates has increased over time. Currently, 50% of the PG seats in pre-clinical and para-clinical specialties and 30% of the seats in clinical specialties in the state's government medical colleges are reserved for in-service candidates. Approximately 50% of the PG seats in private medical colleges are reserved for in-service candidates. Students using this quota must sign a bond of INR 20 lakhs (about US\$33,000) to serve the state government for 5 years after completing the PG program. Quitting before the completion of the bond period makes it obligatory for them to pay the full bond amount as well as refund the salary received till date after starting the PG course.

The scheme has significantly helped fill up vacancies in PHCs, from 209 PHCs without a doctor in the year 2007 to none currently. Also, a significant percentage of PHCs have more than one MO present. Almost 40% of PHCs in the state have two MOs present, and only 2% sanctioned posts currently lie vacant (as per the latest information available at the time of the study). As expected, the scheme finds considerable support among policymakers in the state, and has emerged as a viable solution for filling up posts in PHCs.

However, there are concerns about the areas that the scheme has not managed to address entirely. State officials concede that while the scheme may have filled up vacancies, it does not guarantee MOs' performance or even their presence at PHCs. This issue can to some extent be addressed by improving conditions of service in rural posts and ensuring support. The other major concern is regarding the mismatch between the opportunities for specialization through the PG quota and the need for specialists in the state government. This mismatch leads to shortages of specialists from some streams in government hospitals. Another major concern centers around the idea of the quota system, which makes it even more difficult for candidates from the general category to enter PG programs.

The authors argue for greater monitoring of service quality, alignment of PG quota with specialist requirements, and better tracking and enforcement of the financial bond to further improve the effectiveness of the scheme.

[#] This study pertains to the undivided state of Andhra Pradesh. In 2014, the state of Andhra Pradesh was divided into two states.

The past decade has witnessed a growing interest in motivation issues and the factors that influence the choice to serve in rural versus urban areas. Research and reports have examined “push” and “pull” factors, such as differential availability of lifestyle amenities, basic services, and opportunities for skill enhancement and professional development in rural versus urban areas, and how much monetary and non-monetary incentives compensate for some of the disadvantages of rural living.

Research on health workforce misdistribution has often focused on push factors: the reasons health workers choose not to stay in rural areas. These usually include lack of learning and professional opportunities, poor remuneration, poor working and living conditions, and lack of good schooling for children (Dussault & Franceschini 2006; Lindelow & Serneels 2006; Lindelow et al. 2007).

In an exploration of the converse—why some doctors choose to stay on in rural health service—Sheikh et al. (2012)⁶⁷ conducted a qualitative research study in Chhattisgarh, one of India's least urbanized states. The study revealed that geographical affinities and familial associations greatly influenced the practitioners' initial decision to join service in rural and remote areas. Once in rural service, the doctors were faced with poor working and living conditions, long separation from families, and threats to personal security (parts of Chhattisgarh are hit by insurgency). However, many have stayed on, citing a mix of external and internal factors—geographical and ethnic (tribal) affinities, rural upbringing, availability of schools, personal values of service, professional interest, preference for stable public sector jobs, co-location with spouses, relations with co-workers, relationship with local communities, and acclimatization to rural life. The role ethnic (tribal) affinities play in retaining doctors within their communities is perhaps a unique observation of this study. The interviewed health practitioners identified certain needs for improvement: rational and transparent procedures for placement, transfer, and promotion; better health infrastructure; better housing and schooling for their children; training and skill development to meet specific community needs; and, for contractual doctors, assurance of job security and better salaries. The authors argued for policy-level changes, such as changes in the recruitment system to attract candidates more likely to serve in rural (and tribal) areas, decentralization of medical training to establish medical colleges in rural and remote areas, regularizing contractual workers, and substantially increasing rural salaries. The authors also emphasized that in a low-income setting like India's, rural workforce adequacy should not be seen in isolation but as part of the broad agenda of social development involving strengthening of public service systems and empowering communities.

Research has also focused on the role of financial incentives, which according to Gupta et al. (2011) represent the strategy states in India most commonly used to attract and retain skilled health personnel in rural areas. Eighteen states give “difficult area allowance” (in addition to salaries) to health workers, mostly general and specialist doctors, posted in rural areas. Five of these states give financial incentives to ANMs, nurses, and paramedics as well. Murthy et al. (2012)⁶⁸ examined the career preferences of medical students and in-service MOs working at PHCs in Andhra Pradesh and Uttarakhand in order to identify the incentives that could retain them in rural health services. The findings suggested that while financial incentives (salary increase) were a motivator, there were other variables, like enhanced opportunities for PG education, improvements in health facility infrastructure, improved living conditions, and clear transfer policies, that formed an expected package of incentives. A study by Chakravarthi (2012),⁶⁹ which assessed the efficacy of financial incentives schemes for health professionals in the state of Orissa, also showed that incentives have not been very effective in improving availability of doctors in public health facilities, specifically in peripheral institutions. The authors concluded that monetary incentives used in isolation will not work and would need to be accompanied by improvements in infrastructure, and living and working conditions, to draw and retain doctors in rural areas. Similar conclusions about the efficacy of monetary incentives as a motivator emerged from a cross-sectional survey by Peters et al. (2010)⁷⁰ of 1,916 public and private sector health workers in Andhra Pradesh and Uttar Pradesh. The researchers in this study sought to identify important aspects of health worker satisfaction and motivation among health care workers from private and public sectors. Contrary to common perceptions, many more employees from both sectors rated motivating factors like “good working relationships with colleagues” (96%), “training opportunities” (92%), and environmental

⁶⁷ Sheikh, Kabir, Babita Rajkumari, Kamlesh Jain, Krishna Rao, Pratibha Patanwar, Garima Gupta G, KR Antony, Thiagarajan Sundararaman. 2012. *Location and vocation: why some government doctors stay on in rural Chhattisgarh, India*. *International Health*, 4 (3). pp. 192-199.

⁶⁸ Murthy, Seema, Krishna Rao, Sudha Ramani, Maulik Chokshi, Neha Khandpur, Indrajit Hazarika. 2012. *What do doctors want? Incentives to increase rural recruitment and retention in India*. *BMC Proceedings*, vol. 6, supplement 1, P5.

⁶⁹ Chakravarthi, Indira. 2012. *Effectiveness of financial incentives for recruitment and retention of skilled health professionals for the public health system in Orissa, India*. Oral Presentation. *BMC Proceedings*. 6(Suppl 5):O2.

⁷⁰ Peters, David H, Subrata Chakraborty, Prasanta Mahapatra, Laura Steinhardt. 2010. *Job satisfaction and motivation of health workers in public and private sectors: cross-sectional analysis from two Indian states*. *Human Resources for Health*. 8:27.

factors, such as having “tools to use skills” (92%) and “good physical conditions” (93%), as more important than income (76%). The higher ranking given to non-financial motivating factors indicates that increasing salaries alone may not improve health worker motivation.

To enable governments to conduct systematic analyses of health worker motivation and preferences, the WHO, the World Bank, USAID’s *Capacity Plus* project, and other partners have drafted a user guide⁷¹ for the discrete choice experiment (DCE) methodology. DCE is a quantitative research method that can measure the strength of health workers’ preferences and trade-offs for different job characteristics that can influence their decision to take up rural postings. It examines health workers’ preferences for job posting attributes like salary levels, health facility quality, and opportunities for advanced learning and career promotion. WHO argues for using DCE,⁷² as policymakers can use it to understand the needs and expectations of health workers and, if possible at the policy level, design a package of interventions that may lead a health worker to choose a posting in rural areas.

Rao et al. (2012)⁷³ applied DCE in their study to ascertain the measures policymakers could take to make rural service attractive to doctors and nurses in Uttarakhand and Andhra Pradesh. The study, with a sample of 293 medical and nursing students and 434 in-service doctors and nurses at PHCs, aimed to examine the effect of monetary and non-monetary incentives on job choices in order to develop incentive packages for taking and keeping positions in rural areas. The study findings highlighted the difficulty of incentivizing medical graduates to serve in rural areas, as both monetary and nonmonetary incentives failed to enthruse them. Even with the PG seat reservation incentive, no more than 25% of medical students opted for a rural job. Nursing students, on the other hand, were more inclined to take up rural jobs; and both medical and nursing students from rural areas were more inclined to take up rural jobs. For in-service doctors, nurses, and nursing students, incentive packages (better salary, good facility infrastructure, and seat reservation in higher education) were generally more powerful in influencing job choice than single interventions (with the exception of salary). Interventions like better housing and posting to their native location, which are commonly implemented across India to make rural service more attractive, did not appear to be main drivers of job/location choice. Given the great reluctance among medical students to serve in rural areas and in government jobs, the authors recommend that the potential of nurse-practitioners and other types of non-physician clinicians (like RMA’s in Chhattisgarh) be explored for delivering primary care services in rural India. Also, based on findings, it appears that increasing enrolment of medical and nursing students from rural backgrounds could lead to greater rural recruitment.

Some alternative strategies are also being suggested for recruitment and retention of the rural health workforce. In their paper, Haji et al. (2010)⁷⁴ presented the potential of decentralized health financing systems to improve health workforce recruitment, performance, and retention in rural areas through the use of existing financial resources and creation of financial incentives for health workers. In the southern Indian state of Kerala, effective financial intervention from local government authorities, focused mainly on improving the availability of infrastructure, drugs, and logistics, has been shown to improve PHC performance.⁷⁵ The authors make a case for giving smaller local entities more autonomy and funds to better respond to local needs and also, possibly, better manage human resources. The main advantage of this approach is that it can facilitate re-allocation of funds through a visible, vibrant, and bottom-up approach.

⁷¹ Ryan, Mandy, Julie R Kolstad, Peter Rockers, Carmen Dolea. 2012. *How to conduct a discrete choice experiment for health workforce recruitment and retention in remote and rural areas: a user guide with case studies*. Washington, DC: World Bank. Available from: <http://documents.worldbank.org/curated/en/2012/12/17101972/conduct-discrete-choice-experiment-health-workforce-recruitment-retention-remote-rural-areas-user-guide-case-studies>

⁷² World Health Organization. 2011. *Tools for implementing rural retention strategies. Towards a ‘how to’ guide for ‘Discrete Choice Experiments*. Available from: http://www.who.int/hrh/resources/DCE_report.pdf

⁷³ Rao, Krishna D, Zubin Shroff, Sudha Ramani, Neha Khandpur, Seema Murthy, Indrajit Hazarika, Maulik Choksi, Mandy Ryan, Peter Berman, Marko Vujcic. 2012. *How to attract health workers to rural areas? Findings from a discrete choice experiment from India*. Health, Nutrition and Population (HNP) discussion paper. Washington D.C.

⁷⁴ Haji, Mahjabeen, Varatharajan Durairaj, Pascal Zurn, Laura Stormont, Maximilian Mapunda. 2010. *Emerging opportunities for recruiting and retaining a rural health workforce through decentralized health financing systems*. Bulletin of the World Health Organization. 88(5):397-399.

⁷⁵ Varatharajan, D, R Thankappan, Sabeena Jayapalan. 2004. *Assessing the performance of primary health centres under decentralized government in Kerala, India*. Health Policy Plan. 19:41–51.

Another new approach is presented in the study by Bhattacharya et al. (2012),⁷⁶ who envisage implementation of information technology as a possible strategy to reduce attrition among the health care workforce. Results from their study showed that economic motivation as a factor for changing jobs was not an independent, standalone factor but part of a broader set of factors related to the desire to improve both professional and personal development. Job satisfaction can improve performance by improving quality of day-to-day responsibilities, whether by use of job rotation or by skill development through health information technology (HIT). The authors noted that apart from addressing the need for better salary packages, financial benefits, and a better work environment, implementation of HIT can be used to reduce work load stress, enrich knowledge, and simplify health care delivery processes, impacting job satisfaction, and, thereby, addressing attrition.

Rao's (2011)⁷⁷ technical paper on human resources for universal health coverage attributes the present HRH situation in India largely to the absence of comprehensive HRH development policies and HRH management information systems at both national and state levels. The author emphasizes the need for: HRH divisions at national, state, and district levels to implement transparent policies for recruitment/appointment and undertake HRH management; retention policies that include appropriate monetary and non-monetary incentives to retain skilled medical practitioners in underserved areas; and HRH governance mechanisms. UHC demands that India's public health system be staffed with numerically adequate, equitably distributed, appropriately skilled, and motivated health workers.

Table 5: Summary of Sources Reviewed on the Theme of Strategies for Retention in Rural Areas

S.no.	Source Description	Conclusion
1.	Human Resources for Health in India: Strategies For Increasing the Availability of Qualified Health Workers in Underserved Areas. Gupta et al. 2011. PHFI and NRHM. New Delhi.	Various recruitment and retention strategies for rural areas are being adopted by different states in India. These strategies fall into five major categories: 1) regulatory measures, 2) monetary compensation, 3) workforce management, 4) public-private partnerships, and 5) multi-skilling and task shifting.
2.	Indian approaches to retaining skilled health workers in rural areas Sundaraman & Gupta. Bull World Health Organ 2011; 89: 73-77.	Need to look at the effectiveness of introducing alternative service providers, such as RMAs, to provide health care in rural areas, and educational strategies of preferentially drawing students for medical and nursing education from those who are willing to work in underserved areas.
3.	Compulsory service programs for recruiting health workers in remote and rural areas: do they work? Frehywot et al. Bull World Health Organ 2010;88:364-370.	Compulsory programs have increased availability of health care in underserved areas, but there is a need for better planning, transparency and clarity in communicating the program's rationale and expectations to health professionals, and ensuring support during assignments to improve buy-in from health professionals and increase effectiveness of the strategy.

⁷⁶ Bhattacharya, Indrajit, Anandhi Ramachandran, RK Suri, SL Gupta. 2012. *Attrition of knowledge workforce in healthcare in northern parts of India – Health information technology as a plausible retention strategy*. Journal on Systemics, Cybernetics and Informatics. Vol 10. Number 3.

⁷⁷ Thamma Rao, D. 2011. *Human Resources for Universal Health Coverage: Investment plan for meeting human resources requirements for Universal Health Care*. Public Health Foundation of India. Available from: <http://uhc-india.org/>

S.no.	Source Description	Conclusion
4.	<p>Attracting doctors to rural areas: A case study of the post-graduate seat reservation scheme in Andhra Pradesh (Box 2)</p> <p>Shroff et al. Indian J Community Med. 2013;38:27-32.</p>	<p>The scheme has significantly helped fill up vacancies in PHCs, but concerns remain about service quality, mismatch of PG quota with specialist requirements, tracking and enforcement of financial bonds, and the quota system's exclusion of general candidates.</p>
5.	<p>Location and vocation: why some government doctors stay on in rural Chhattisgarh, India</p> <p>Sheikh et al. 2012. International Health, 4 (3). pp. 192-199.</p>	<p>The decision to stay on in rural areas is determined by a mix of external and internal factors — geographical and ethnic (tribal) affinities, rural upbringing, availability of schools, personal values of service, professional interest, preference for stable public sector jobs, co-location with spouses, relations with co-workers, relationship with local communities, and acclimatization to rural life.</p>
6.	<p>What do doctors want? Incentives to increase rural recruitment and retention in India</p> <p>Murthy et al. 2012. BMC Proceedings, vol. 6, supplement 1, P5.</p>	<p>Although financial incentive (salary increase) is a motivator, other variables, like enhanced opportunities for PG education, improvements in health facility infrastructure, improved living conditions, and clear transfer policies, form an expected package of incentives.</p>
7.	<p>Effectiveness of financial incentives for recruitment and retention of skilled health professionals for the public health system in Orissa, India</p> <p>Chakravarthi I. 2012. Oral Presentation. BMC Proceedings, 6(Suppl 5):O2</p>	<p>Isolated measures, like monetary incentives, alone cannot help retain health workers; such measures need to be accompanied by improvements in infrastructure, living and working conditions.</p>
8.	<p>Job satisfaction and motivation of health workers in public and private sectors: cross-sectional analysis from two Indian states</p> <p>Peters et al. Human Resources for Health. 2010. 8:27.</p>	<p>Higher ranking given to non-financial motivating factors (like "good working relationships with colleagues," "training opportunities," and environmental factors) indicates that increasing salaries alone may not improve health worker motivation.</p>
9.	<p>How to conduct a discrete choice experiment for health workforce recruitment and retention in remote and rural areas: a user guide with case studies</p> <p>Ryan et al. 2012. Washington, DC: World Bank.</p>	<p>User guide to conducting DCE, a quantitative research method that can measure the strength of health workers' preferences and trade-offs for different job characteristics, which influence their decision to take up rural postings. A better understanding of health workers' needs and expectations can help in designing appropriate packages.</p>
10.	<p>How to attract health workers to rural areas? Findings from a discrete choice experiment from India</p> <p>Rao et al. 2012. Health, Nutrition and Population (HNP) discussion paper. Washington D.C.</p>	<p>Reluctance among medical students to serve in rural areas regardless of incentive offered creates a need to explore the potential of nurse-practitioners and other types of non-physician clinicians for health care in rural areas. Increasing enrolment of medical and nursing students from rural backgrounds could help; incentive packages (better salary, good facility infrastructure, and seat reservation in higher education) are generally more powerful in influencing job choice than single interventions (with the exception of salary).</p>

S.no.	Source Description	Conclusion
11.	<p>Emerging opportunities for recruiting and retaining a rural health workforce through decentralized health financing systems</p> <p>Haji et al. Bulletin of the World Health Organization 2010, 88(5):397-399.</p>	<p>Decentralized health financing systems have potential to improve health workforce recruitment, performance, and retention in rural areas; use of existing financial resources; and creation of financial incentives for health workers.</p>
12.	<p>Attrition of Knowledge Workforce in Healthcare in Northern parts of India—Health Information Technology as a Plausible Retention Strategy</p> <p>Bhattacharya et al.</p> <p>Journal on Systemics, Cybernetics and Informatics. 2012. Vol 10. Number 3.</p>	<p>Apart from addressing the need for better salary packages, financial benefits, and better work environment, implementation of HIT can be used to reduce work load stress, enrich knowledge, and simplify health care delivery processes, impacting job satisfaction, and, thereby, addressing attrition.</p>
13.	<p>Human Resources for Universal Health Coverage: Investment plan for meeting human resources requirements for Universal Health Care</p> <p>Thamma Rao, D. 2011. Public Health Foundation of India.</p>	<p>Universal health coverage requires a numerically adequate, equitably distributed, appropriately skilled, and motivated health workforce. Need for: HRH divisions to implement transparent policies for recruitment and appointment and to undertake HRH management; retention policies that include appropriate monetary and non-monetary incentives to retain skilled medical practitioners in underserved areas; and HRH governance mechanisms.</p>

4.4 Contracting Private Health Workers (Public-Private Partnerships)

India has successfully developed a vast network of physical infrastructure for primary health care—148,366 sub-centers, 24,049 primary health centers, and over 4,833 community health centers.⁷⁸ However, a chronic shortfall of skilled health workers is visible at every level. More than 800 PHCs (about 3%) operate without any physician.⁷⁹ Similarly, CHCs report a deep shortage of obstetricians and gynecologists (56%), pediatricians (67%), and surgeons (56%).⁸⁰ Most of India's doctors are employed outside the public* health sector, and vacancies continue to plague public health facilities, especially in rural areas.⁸¹ A report by a task force on medical education, constituted by the Ministry of Health and Family Welfare, ascertained that the private sector provides 81% of the doctors, 58% of the hospital buildings, and 29% of the hospitals beds in India.⁸² Much of the literature we reviewed on the theme of contracted health workforce looked at public-private partnership as a viable solution for tapping into the rapid growth of India's private health sector⁸³ to address the public health system's resource constraints and to increase the poor's access to quality health care.

While reviewing the health sector in India, the World Bank (2001) and the National Commission on Macroeconomics in Health (2003, 2005) strongly argued for collaborating with the private sector.⁸⁴ Both the NRHM (2005–2012) and the National Health Policy (2002) took into consideration the vital role being played by private providers and civil society organizations, and recommended partnerships to supplement the public health system.⁸⁵ The need for innovations in human resource engagement was clearly stated by the Reconstituted Task Force on Public Private Partnership,⁸⁶ which was set up under the NRHM. Examining the issue of developing partnerships with the non-governmental sector, including profit and not-for-profit sectors, the Task Group looked at partnerships to play the role of supplementing public services in contexts where these are weak, while clearly articulating that strengthening the public system and building a well-funded, well-functioning, effective, and efficient public health sector at all levels should be the primary aim. Drawing a clear distinction between for-profit and not-for-profit sectors, the group unanimously opined that it was mostly the not-for-profit NGOs that were willing to reach out in remote areas. Therefore, the Task Force strongly recommended the creation of an enabling mechanism in the form of a grants-in-aid committee at the district, state, and national levels to facilitate the achievement of the NRHM norm of ensuring a minimum 5% expenditure of NRHM budget through NGOs.

⁷⁸ Ministry of Health and Family Welfare. 2012. *Rural Health Statistics in India*. Statistics Division, Ministry of Health and Family Welfare, Government of India.

⁷⁹ Staff Reporter. 2008. *Over 800 rural hospitals don't have a single doctor*. *Thaindian News*. New Delhi.

⁸⁰ Satpathy, SK, S Venkatesh. 2006. *Human resources for health in India's National Rural Health Mission: Dimension and challenges*. *Regional Health Forum* 2006, 10:29-37.

* In general, the term 'public sector' refers to institutions or facilities that are financed by state revenue and function under government budgets or control. 'Private sector' comprises organizations and individuals that work outside the direct control of the state (Bennett 1991).

⁸¹ Murthy, Seema, Krishna Rao, Sudha Ramani, Maulik Chokshi, Neha Khandpur, Indrajit Hazarika. 2012. *What do doctors want? Incentives to increase rural recruitment and retention in India*. *BMC Proceedings*, vol. 6, supplement 1, P5.

⁸² Ministry of Health and Family Welfare. 2008. *Draft report by the Task Force on Medical Education for the Rural Health Mission*. Ministry of Health and Family Welfare, Government of India.

⁸³ PricewaterhouseCoopers. 2007. *Healthcare in India-Emerging market report*.

⁸⁴ Raman, A Venkat, James Warner Björkman. 2006. *Public/private partnership in health care services in India*. *Health Administrator*, Volume XXI, pp 62-77.

⁸⁵ Birla, Bharti, Udita Taneja. 2008. *Public private partnerships for healthcare delivery in India*. *The Internet Journal of World Health and Societal Politics*. Volume 7 Number 1.

⁸⁶ Ministry of Health and Family Welfare. *Draft Report of the Reconstituted Task Force on Public Private Partnership under NRHM*. Ministry of Health and Family Welfare. Government of India. Available from: tripuranrhm.gov.in/Circular/PPP_Task_Force_Report-Draft.pdf

A number of states in India have been exploring different PPP models, including contracting in of specialists for specific tasks and contracting out of services to private health practitioners. In their policy brief on HRH-related challenges and initiatives, Sundararaman & Gupta (2011)⁸⁷ stated that 13 states in India are contracting private specialists to work in public health facilities either as a fixed-day service, where private doctors provide health care services at public health facilities on a fixed day of the week, or on an on-call basis. For example, Tamil Nadu augmented the availability of specialist services by allowing First Referral Units (FRUs) to hire retired or private practice anesthetists on a per case basis. These anesthetists were paid INR 1,000 (about US\$17) per cesarean section conducted and an additional INR 100 (about US\$2) for transport.⁸⁸ As opposed to contracting in a private specialist or maintaining a full-time specialist in the public health facility, nine states in India are contracting out certain health services to private health institutions. Maternal health services make up the bulk of care that is being contracted out under various state-sponsored schemes. Under these schemes, the state government bears the cost of care given to a beneficiary at a private health facility. The authors note that these (contracting out) schemes have been popular with the intended beneficiaries and brought improvements in service delivery for maternal care.

The strategy of contracting in specialist doctors for service delivery at public health facilities has been the subject of recent research. A broad view of the research in this area seems to indicate that contracting in providers is less effective than contracting out services. In their study, Randive et al. (2012)⁸⁹ explored the provision, practice, performance, and challenges in contracting in specialists for emergency obstetric care in rural India. Access to 24-hour EmOC has been one of NRHM's service guarantees, but it is impeded by lack of specialists. In response to the shortage of skilled health personnel at public health facilities, NRHM has made financial provisions for contracting in private specialists for EmOC services under two of its key initiatives—the Janani Suraksha Yojana* and the Indian Public Health Standards (IPHS)#. Under JSY, a contracted-in specialist would be paid a fixed amount of INR 1,500 (about US\$25) for every complicated delivery attended to, while IPHS enables the facility administrators to decide the fee within IPHS's broad guidelines. In the study by Randive et al., the amount to be paid to contracted-in specialists under IPHS was found to be fixed at INR 20,000 (about US\$335) per specialist per month.

The study by Randive et al. looked at how the strategy of contracting in obstetricians was faring in three districts (Nandurbar, Amravati, and Satara) of Maharashtra. The findings revealed a high concentration of obstetricians in the private sector—about eight times more obstetricians in the private sector than in the public sector. The EmOC specialist positions were vacant in 83% of all public health facilities, indicating the potential for contracting in EmOC specialists. However, no contracting in of private EmOC specialists had been done under JSY, as the medical superintendents were unaware of this provision, and were often using the financial provision to instead subsidize costs (by giving INR 1,500 or about US\$25) for JSY-eligible mothers+ undergoing cesarean section (C-section) at private facilities.

⁸⁷ Sundararaman, Thiagarajan, Garima Gupta. 2011. *Human Resource for Health: The Crisis, the NRHM Response and the Policy Options*. Policy Brief, Institute of Applied Manpower Research, Planning Commission, Government of India.

⁸⁸ Bajpai, Nirupam, Ravindra Dholakia, Jyothi Vynatheya. 2013. *Increasing the Availability of Specialist Services in Rural India*. Submitted to UNICEF India and International Advisory Panel to NRHM, Ministry of Health and Family Welfare, Government of India.

⁸⁹ Randive, Bharat, Sarika Chaturvedi, Nerges Mistry. 2012. *Contracting in specialists for emergency obstetric care- does it work in rural India?* BMC Health Serv Res 2012 31;12:485.

* Launched in 2005, Janani Suraksha Yojana (JSY) aims to reduce maternal and neonatal mortality by promoting institutional delivery among poor pregnant women. It provides cash incentives to mothers conditional on their delivering in health institutions.

NRHM published Indian Public Health standards (IPHS) in 2007 to serve as reference for public health care infrastructure planning and up-gradation in states and union territories. The IPHS are a set of uniform standards envisaged to improve the quality of health care delivery in the country.

+ Maharashtra has been categorized as a high performing state, where JSY is applicable only to women who are either below the poverty line or from scheduled castes or scheduled tribes and over 19 years of age at the time of the first two live births.

Under IPHS, however, private EmOC specialists were contracted in at 20% of the facilities with vacancies for EmOC specialists. Many facilities did not attempt contracting in for EmOC due to absence of a functional operation theatre. Where made, the contracts were more of a relational nature, with poor monitoring structures. Overall, contracting in had hardly increased the availability of C-section at rural public facilities, except in facilities with determined leadership. As such, the contracting in arrangement was used primarily for elective cases, not for emergencies. The study pointed to inadequate infrastructure, longer distance to private specialists, insufficient financial provision for contracting in, and poor management capacities as barriers to effective implementation of the contracting in model.

Chaturvedi & Randive (2011)⁹⁰ drew similar sobering conclusions about design and implementation of contracting in private specialists (as PPP) for EmOC from their cross-sectional study in Ahmednagar district of Maharashtra. The study found a clear preference among district administrators for subsidization of costs for services at private facilities to contracting in private specialists. As contracting in is optional and no defined criteria guide the choice between contracting in and cost subsidization, there is opportunity to divert patients from public facilities to private establishments. No PPPs had been executed in the study district for contracting in private specialists. Infrastructural shortcomings (for example, no power backup for the blood storage facility) and passive support from implementers emerged as major barriers. Lack of ownership of the scheme among administrators and lack of role clarity, specification of job tasks, and clear guidelines impeded the implementation of the contracting in scheme. The authors also pointed to the need for a realistic assessment of the monetary incentive, as INR 1,500 may be insufficient to attract private specialists into partnership.

Studies on contracting out have largely focused on the success of voucher programs, especially the Chiranjeevi Yojana (CY) in Gujarat. A large-scale performance-based financing program, CY provides for free delivery care for poor and tribal women by capitalizing on the huge private health sector in the state. It pays accredited private hospitals a fixed payment for providing free maternity services to women from below-poverty-line households.* Singh et al. (2009)⁹¹ documented the innovative PPP between the Government of Gujarat and the private obstetricians practicing in rural areas. The researchers studied CY in its early years, and found that during its pilot phase, 180 obstetricians joined the scheme in the first year. The program had improved access to treatment of complications and cesareans in remote areas and increased institutional delivery for poor women. From its launch in January 2006 to March 2008, around 97,192 poor women delivered in private hospitals under the scheme. The authors concluded that CY had shown that it was possible to develop large-scale partnerships with the private sector to further maternal health goals at a relatively small cost, and that states could manage social health insurance programs without help from any insurance company or international donor. CY's positive impact was confirmed by Ng et al. (2013),⁹² who explored the effect of CY on public-private maternal health service provision and on maternal mortality. Their study found that institutional deliveries in Gujarat increased by 23.8%—from 68.2% of all deliveries in 2006 to 92.0% in 2010. The proportion of CY-supported deliveries among all private institutional deliveries increased from 9.3% in 2006 to 19.8% in 2010. The authors argued that CY had demonstrated the potential of

⁹⁰ Chaturvedi, Sarika, Bharat Randive. 2011. Public private partnerships for emergency obstetric care: Lessons from Maharashtra. *Indian J Community Med* (2011);36:21-6

⁹¹ Singh, Amarjit, Dileep Mavalankar, Ramesh Bhat, Ajesh Desai, Sureshchandra R Patel, Prabal V Singh, Neelu Singh. 2009. Providing skilled birth attendants and emergency obstetric care to the poor through partnership with private sector obstetricians in Gujarat, India. *Bulletin of the World Health Organization*; 87 (12) 960-964.

* Below-poverty-line household status, which is either determined by multidimensional means testing or designated by the relevant village authority, confers a variety of benefits, including public subsidies for food grains, sugar, oil and fuel, to households below a designated income level. These households are provided with an identification card (called a BPL card), which makes them eligible for several social welfare programs targeted at the poor.

⁹² Ng, Marie, Parvathy Shanker-Raman, Rajesh Mehta, Ayesha De Costa, Dileep Mavalankar. 2013. Initial results on the impact of Chiranjeevi Yojana: a public-private partnership programme for maternal health in Gujarat, India. *Lancet*; 381:S98.

PPP schemes for enhancing access to maternal health care services. These and other studies^{93,94} estimated that CY had led to a 90% reduction in maternal deaths and 60% reduction in neonatal deaths among beneficiaries in Gujarat.

Further research by Mohanan et al. (2014)⁹⁵ argued that the positive findings of previous studies on Gujarat's CY program were problematic. Their study concluded that CY was not associated with changes in the probability of institutional delivery, maternal morbidity, or delivery-related household expenditure. The researchers argued that perceptions of the program's success were based on results of earlier studies that were simple cross-sectional investigations or before-and-after comparisons with severe limitations. The earlier studies did not address self-selection of women into institutional delivery, reporting inaccuracies by hospitals, or any increases in institutional deliveries over time that were unrelated to CY.

In this context, it is important to mention the paper by Krupp & Madhivanan (2009),⁹⁶ in which the researchers examined how two large health systems in India—Gujarat (CY) and Tamil Nadu—have successfully implemented two different strategies in response to the challenges of achieving MDG 5. The authors commended Gujarat's CY program for successfully relocating obstetric gynecology services from the public to the private sector, but also pointed to the different strategy adopted by Tamil Nadu. The southern Indian state of Tamil Nadu has made remarkable advances in maternal and neonatal health through a more holistic approach to strengthening the public primary health care apparatus. For example, the state established new PHCs and extended hours at existing centers.⁹⁷ Tamil Nadu has also made efforts to address staff shortages by enhancement of non-specialist physician and nursing roles, creation of comprehensive emergency obstetric newborn care centers in 51 government hospitals,⁹⁸ and relocation of some health system functions (ancillary services) to the private sector. The authors emphasize that successful deployment of two different strategies by Gujarat and Tamil Nadu shows that there is no single recipe for success, and that solutions need to be homegrown.

The strategy employed by Tamil Nadu was also discussed in a recent influential report, titled *Good health at low cost*.⁹⁹ The report highlighted Tamil Nadu's significant advances in maternal and neonatal health, owing to its vast network of PHCs, a large-scale multipurpose health worker scheme, and innovation in drug procurement and distribution, among others. It also discussed the state's flexible model of public-private collaboration. In Tamil Nadu, the private sector undertakes 80% of the outpatient visits and 60% of admissions, while preventive maternal and child health care continues to be provided in the public sector. Public-private engagement is common in contracting out clinical and laboratory services and information campaigns. To summarize, Tamil Nadu has adopted predominantly public-sector solutions and contracted out only some tasks, to promote affordability.

⁹³ Mavalankar, Dileep, Amarjit Singh, Sureshchandra R Patel, Ajesh Desai, Prabal V Singh. 2009. Saving mothers and newborns through an innovative partnership with private sector obstetricians: Chiranjeevi scheme of Gujarat, India. *Int J Gynaecol Obstet*; 107: 271-6.

⁹⁴ Bhat, Ramesh, Dileep Mavalankar, Prabal V Singh, Neelu Singh. 2009. Maternal healthcare financing: Gujarat's Chiranjeevi scheme and its beneficiaries. *J Health Popul Nutr*; 27: 249-58.

⁹⁵ Mohanan, Manoj, Sebastian Bauhoff, Gerald La Forgia, Kimberly Singer Babiarz, Kultar Singh, Grant Miller. 2014. Effect of Chiranjeevi Yojana on institutional deliveries and neonatal and maternal outcomes in Gujarat, India: A difference-in-differences analysis. *Bulletin of the World Health Organization* 92, no. 3: 187-194.

⁹⁶ Krupp, Karl, Purnima Madhivanan. 2009. Leveraging human capital to reduce maternal mortality in India: Enhanced public health system or public-private partnership? *Hum Resour Health*; 7: 18.

⁹⁷ Venkatesh, Athreya, Sheela Rani Chunkath. 2000. Monitoring the health sector. *Frontline*; 16(27).

⁹⁸ Government of Tamil Nadu, Department of Health and Family Welfare. Tamil Nadu Health Systems Project. Policy Note 2008-2009, Demand No 19. Chennai 2008

⁹⁹ Balabanova, Dina, Anne Mills, Lesong Conteh, Baktygul Akkaziyeva, Hailom Banteyerga, Umakant Dash, Lucy Gilson, Andrew Harmer. 2013. Good health at low cost 25 years on: lessons for the future of health systems strengthening. *Lancet*; 381: 2118-33.

Box 3: Strategies on the Ground—Gujarat

Chiranjeevi Yojana—Gujarat’s PPP Strategy

Despite being one of India’s leading industrial states, Gujarat has lagged far behind many of its less-well-off neighbors on social and health indicators. In 2005, Gujarat reported MMR of 172 per 100,000 live births—lower than the national average of 301 but well above that of the relatively poorer states of Kerala (110) and Tamil Nadu (134). Similarly, Gujarat’s performance on IMR (54 per 1,000 births) was almost on par with the national average of 58, but much above Kerala (14), Maharashtra (36), Tamil Nadu (37), West Bengal (38), and Uttaranchal (42). Shortage of human resources emerged as the key hurdle before the state’s efforts to lower maternal and infant mortality. In Gujarat, the number of obstetricians at sub-district level is limited to 7–8 obstetricians serving a rural population of about 32 million, resulting in FRUs that are seldom fully functional, thus limiting access to EmOC.

Mavalankar et al. (2009) describe how in 2005 the Gujarat government, in collaboration with the Indian Institute of Management, Ahmedabad, the NGO Sewa Rural, Jhagadia, and the German bilateral aid agency (GTZ), began exploring options for providing skilled delivery care and EmOC through insurance companies and private sector obstetricians. The scheme sought to tap the fairly strong presence of private obstetricians in rural areas. In October 2005, the state government of Gujarat launched the pilot for *Chiranjeevi Yojana* (local name meaning “a scheme for long life”) for mothers and babies as a public-private partnership to increase institutional delivery rates. The pilot project was started in five remote and underdeveloped districts of the state with a population of 11 million. It was subsequently scaled up in January of 2007 to cover the entire state. Under the scheme, the state health department empanelled private obstetricians who: had postgraduate qualifications in obstetrics and gynecology; owned their own hospital with a labor room, operation theatre, and blood bank; and had access to anesthesiology services.

Under the scheme, the contracted private obstetricians provide skilled birth attendance and CEmOC free of charge to women from BPL households. The government pays obstetricians INR 179,500 (about US\$2,990) for a package of 100 deliveries, including treatment of complications (also cesareans) and reimbursement of at least some of the women’s travel costs, coming to an average price of INR 1,795 (about US\$30) per delivery. The CY payment package assumes a fixed rate of cesareans (7%) and other complications based on international epidemiological estimates and local experience. This financial arrangement removes the monetary incentive for doing more cesarean sections, which is considered a common problem in fee-for-service private practice in India. The women wishing to take part in the scheme were required to carry their family’s BPL card to use free delivery services from any private obstetrician contracted under the scheme. To allay the fears of private doctors that the government would not pay on time, obstetricians were given an initial advance payment of INR 20,000 (about US\$333) on signing the contract. Deliveries took place in private hospitals, for which the district health office promptly reimbursed the obstetricians.

Mavalankar et al. (2009) reported encouraging results from the initial years of the scheme. A total of 180 obstetricians joined the scheme in the pilot phase, and each contracted private obstetrician attended an average of 540 deliveries during January 2006–March 2008. During this period 91,792 poor women in the five pilot districts benefited from the program. The authors further estimated that there were fewer reported maternal and newborn deaths among the beneficiaries, compared to the number of deaths expected in the absence of the scheme. CY received the Asian Innovations Award in 2006. It had covered almost 800,000 deliveries by March 2012, and is roundly seen as a successful model that the other Indian states should follow.

Mavalankar et al. conclude that the scheme demonstrates a practical example of engaging private obstetricians on a large scale to provide skilled birth attendance and emergency obstetric care to poor women. The scheme has shown first-hand the possibility of collaborating with the private sector to rapidly increase availability and utilization of maternal care services among the poor and underserved in low-income countries.

As a method of operationalizing contracting out health services, voucher schemes are seen as instruments of public-private collaborations that use demand-side financing, a subsidy that places purchasing power in the hands of beneficiaries, to make quality health care possible for the poor. Recent systematic reviews find that voucher schemes have had positive effects on health service utilization, on quality, and for targeting

resources to intended beneficiaries (Bellows et al., 2011; Meyers et al., 2011). The report¹⁰⁰ on pilot project *Sambhav* (meaning, “it is possible”) described the four voucher programs that had been implemented (2006–2012) as part of the Innovations in Family Planning Services (IFPS) Project, a joint initiative by the Government of India and USAID to expand access to family planning (FP) and reproductive health services among BPL beneficiaries in selected districts of Uttar Pradesh, Uttarakhand, and Jharkhand states. The *Sambhav* vouchers targeted subsidies to BPL populations, enabling access to a range of services from private providers, including antenatal care, institutional delivery, postnatal care, neonatal care, and FP. Results of the *Sambhav* voucher pilot programs were encouraging, facilitating delivery of nearly 12,500 infants in private health facilities, and supporting about 44,000 antenatal care visits and 10,300 postnatal care visits. Also, women and men from BPL households used about 9,500 vouchers to obtain FP methods. Success of the *Sambhav* pilot has encouraged the state governments in Uttarakhand and Uttar Pradesh to take steps to scale up the program.

Although contracting out and contracting in are the key models of PPP, Venkat Raman & Björkman (2006)¹⁰¹ point to other forms of partnerships that are beginning to generate interest. Their research study compiled 16 case studies from nine states of India, covering diverse forms of PPPs and a wide range of clinical care and non-clinical support services, including diagnostic services, general curative care, maternal and child health care, community health financing, health promotion activities, and information and communication technology-based health service provision. In their study, the private sector was defined as private-practice physicians, commercial contractors, large private and corporate super-specialty hospitals, and NGOs. The study indicated that some of the most successful PPPs had been with private not-for-profit organizations. It found that policy pronouncements by government alone were not sufficient for PPPs to succeed. Visionary leadership, social entrepreneurship, and relationships based on trust between the stakeholders were critical for successful partnerships. The authors also stressed that partnership with the private sector could not be a substitute for the provision of health services by the public sector. A public health system that fails to deliver quality services because of shortcomings in basic administrative capacity would not be able to harness the private sector for health care provision. The first step then must be to strengthen the administrative capacity of the public health system.

In their study on PPPs, Venkat Raman & Björkman (2006) also discussed the informal for-profit sector in India, comprising the large number of non-qualified rural medical practitioners. George & Iyer (2013)¹⁰² have elaborated on the role of these informal providers—those without any government-recognized medical degrees, commonly known by the misleading acronym RMPs (Registered Medical Practitioners)—in their paper. Informal providers are increasingly being seen as major providers in the south Asian region (Ahmed, Hossain, & Chowdhury 2009; Rashid, Akram, & Standing 2011). In India, these providers have long been recognized as playing a crucial role (Neumann, Bhatia, Andrews, & Murphy 1971), and have historically outnumbered formal providers. Despite their operating illegally and informally, the unqualified medical practitioners’ expertise, service networks, reputations, and success are deeply embedded in the communities to which they belong. For the many villages that have no resident public or private doctor available at night, these unqualified practitioners provide treatments that reassure patients. Many of the unqualified medical practitioners refer patients to government facilities for diagnostic services and treatment of major ailments. Reforms to improve access to health care could perhaps explore the informal market for some level of engagement, but after addressing the critical need for capacity building in this sector and establishing robust quality assurance mechanisms.

The need for strengthening regulation and adherence to standards has been emphasized by NRHM’s Reconstituted Task Force on Public Private Partnership¹⁰³ in their discussion on partnerships with the non-

¹⁰⁰ IFPS Technical Assistance Project (ITAP). 2012. *Sambhav: Vouchers Make High-Quality Reproductive Health Services Possible for India’s Poor*. Gurgaon, Haryana: Futures Group, ITAP. Available from: pdf.usaid.gov/pdf_docs/pnadz573.pdf.

¹⁰¹ Raman, A Venkat, James Warner Björkman. 2006. *Public/Private Partnership in Health Care Services in India*. *Health Administrator*, Volume XXI, pp 62-77.

¹⁰² George, Asha, Aditi Iyer. 2013. *Unfree markets: Socially embedded informal health providers in northern Karnataka, India*. *Social Science & Medicine*, 10.1016.

¹⁰³ Ministry of Health and Family Welfare. *Draft Report of the Reconstituted Task Force on Public Private Partnership under NRHM*. Ministry of Health and Family Welfare. Government of India. Available from: tripuranrh.m.gov.in/Circular/PPP_Task_Force_Report-Draft.pdf

governmental sector. Recognizing the rapid growth of the private health sector in India in the last five decades and the extensive range of private providers (from “the best of hospitals to the worst of quacks”), the task group strongly advocated for a focus on ethical standards and standard treatment protocols. The need, as the task group noted, is for ensuring transparency and trust in the process of partnership formation with the private sector.

Table 6: Summary of Sources Reviewed on the Theme of Contracting Private Health Workers

S.no.	Source Description	Conclusion
1.	Human Resources for Health: The Crisis, the NRHM Response and the Policy Options Sundaraman & Gupta. 2011. Draft Policy Brief from the National Health Systems Resource Centre.	States across India are exploring different PPP models, including contracting in of specialists for specific tasks and contracting out of services to private health practitioners; contracting out schemes have been popular and brought improvements in service delivery for maternal care, but reports indicate that contracting in may not prove as effective an approach.
2.	Contracting in specialists for emergency obstetric care—does it work in rural India? Randive et al. 2012. BMC Health Serv Res. 31;12:485.	Key barriers to the effective implementation of the contracting in model include poor management capacities of public facility administrators, inadequate infrastructure, longer distance to private specialists, and insufficient financial provision for contracting in.
3.	Public private partnerships for emergency obstetric care: Lessons from Maharashtra Chaturvedi& Randive. 2011. Indian J Community Med. 36:21-6.	There is a preference among district administrators for subsidization of costs for services at private facilities (contracting out) rather than contracting in private specialists. Impediments to contracting in include infrastructural shortcomings (for example, no power backup for blood storage) and passive support from implementers. There is also a need to realistically assess the monetary incentives needed to attract private specialists into partnership.
4.	Providing skilled birth attendants and emergency obstetric care to the poor through partnership with private sector obstetricians in Gujarat, India. Singh et al. 2009. Bulletin of the World Health Organization; 87 (12) 960-964.	Chiranjeevi Yojana, through contracting out maternal care services in Gujarat, has improved access to treatment of complications and cesareans in remote areas, and increased institutional delivery for poor women.
5.	Initial results on the impact of Chiranjeevi Yojana: a public–private partnership programme for maternal health in Gujarat, India Ng et al. 2013, Parvathy Shanker-Raman, Rajesh Mehta, Ayesha De Costa, Dileep Mavalankar. Lancet; 381:S98.	Chiranjeevi Yojana has demonstrated the potential of PPP schemes for enhancing access to maternal health care services: institutional deliveries in Gujarat increased by 23.8%—from 68.2% of all deliveries in 2006 to 92.0% in 2010. The proportion of scheme-supported deliveries among all private institutional deliveries increased from 9.3% in 2006 to 19.8% in 2010.
6.	Effect of Chiranjeevi Yojana on Institutional Deliveries and Neonatal and Maternal Outcomes in Gujarat, India: A Difference-in-Differences Analysis Mohanan et al. 2014. Bulletin of the World Health Organization 92, no. 3: 187-194.	Chiranjeevi Yojana was not found to be associated with changes in the probability of institutional delivery, maternal morbidity, or delivery-related household expenditure. Perceptions of the program's success were based on results of earlier studies that were simple cross-sectional investigations or before-and-after comparisons with severe limitations.

S.no.	Source Description	Conclusion
7.	Leveraging human capital to reduce maternal mortality in India: enhanced public health system or public-private partnership? Krupp & Madhivanan. 2009. Hum Resour Health; 7: 18	There is no single recipe for success: solutions need to be homegrown, as shown by the success of two divergent strategies—Gujarat’s scheme for relocating obstetric gynecology services to the private sector, and Tamil Nadu’s focus on strengthening the entire public primary health care apparatus.
8.	Good health at low cost 25 years on: lessons for the future of health systems strengthening Balabanova et al. 2013. Lancet; 381: 2118–33.	A vast network of PHCs, a large-scale multipurpose health worker scheme, and innovation in drug procurement and distribution, among others, have contributed to significant advances in maternal and neonatal health in Tamil Nadu. The state has adopted a flexible model of public-private collaboration, with the private sector undertaking 80% of the outpatient visits and 60% of admissions, while preventive maternal and child health care continue to be provided in the public sector.
9.	Sambhav: Vouchers Make High-Quality Reproductive Health Services Possible for India's Poor IFPS Technical Assistance Project (ITAP). 2012. Gurgaon, Haryana: Futures Group, ITAP.	Four voucher programs launched under the pilot Sambhav project have shown encouraging results: targeted subsidies to BPL populations have helped improve access to quality health care from private providers for services including antenatal care, institutional delivery, postnatal care, neonatal care, and FP. The voucher scheme facilitated delivery of nearly 12,500 infants in private health facilities, and supported about 44,000 antenatal care visits and 10,300 postnatal care visits.
10.	Public/Private Partnership in Health Care Services in India Venkat Raman & Björkman. 2006. Health Administrator, Volume XXI, pp 62-77.	States across India establish diverse forms of health-sector PPPs, where the private sector is represented by individual physicians, commercial contractors, large private/corporate super-specialty hospitals, and NGOs. Some of the most successful PPPs have been with private not-for-profit organizations. Visionary leadership, social entrepreneurship, and trust-based relationships between stakeholders are critical for successful partnerships. The public sector must improve basic administrative systems to effectively harness the private sector for clinical and nonclinical services.
11.	Unfree markets: Socially embedded informal health providers in northern Karnataka, India George & Iyer. 2013. Social Science & Medicine, 10.1016.	Despite their operating illegally and informally, the RMPs’ expertise, service networks, reputations, and success are deeply embedded in the communities to which they belong. In villages with no resident public or private doctor available at night, RMPs provide treatments that reassure patients. Many RMPs refer patients to government facilities for diagnostic services and treatment of major ailments.
12.	Draft Report of the Reconstituted Task Force on Public Private Partnership under NRHM Ministry of Health and Family Welfare. Government of India.	NRHM’s Reconstituted Task Force on Public Private Partnership looked at partnerships to supplement public services in contexts where it is weak, while keeping the focus on strengthening the public system. Not-for-profit NGOs were seen as more willing to reach out in remote areas. Emphasis was placed on the need for strengthening regulation and standards if partnerships with the non-governmental sector had to be developed.
13.	Saving mothers and newborns through an innovative partnership with private sector obstetricians: Chiranjeevi scheme of Gujarat, India (Box 3) Mavalankar et al. 2009. Int J Gynaecol Obstet; 107: 271-6.	Chiranjeevi Yojana demonstrates practical experience of engaging private obstetricians on a large scale to provide skilled birth attendance and emergency obstetric care to poor women in low-income countries.

4.5 Performance-Based Incentives

The UN Leaders' Summit on MDGs¹⁰⁴ in 2010 identified an urgent need for policies and strategies to improve the health of women and children. Health technology research has already provided a comprehensive understanding of the health interventions that can substantially improve maternal and child health-related outcomes.^{105,106} Governments around the world have accordingly rolled out health interventions. However, large gaps in access to these health interventions remain, especially among the poorest¹⁰⁷ in the developing world. For example, despite the vast infrastructure of public health facilities, the proportion of institutional deliveries in rural India was just 28.9% as late as 2005–2006.^{108,109} In this scenario, a key question that confronts policymakers is what interventions can be introduced in the health system to improve access to health services.

Performance-based incentives, a strategy that links payment to behaviors that improve health, is gaining currency as a potentially powerful catalyst to strengthen health systems and achieve health targets.¹¹⁰ Eichler & Levine (2009)¹¹¹ define PBIs as “transfer of money or material goods conditional on taking a measurable action or achieving a predetermined performance target.” PBIs can be given to both patients/beneficiaries (demand-side incentives) for taking health-related actions, and to health care facilitators/providers (supply-side incentives) for achieving performance targets. Given our focus on HRH issues, this landscape analysis looks more closely at supply-side incentives.

Eichler (2006)¹¹² has emphasized that carefully designed financial and material incentives for providers have the potential to motivate additional effort, promote compliance with recommended clinical practice, and encourage innovation in service delivery, including a creative approach to reach underserved populations. In this context, Eichler pointed to a case from Haiti, where incentivizing the contracted NGOs to increase the percentage of children that were fully vaccinated in their catchment areas motivated them to solve the longstanding problem of unreliable vaccine supplies by making the concerned ministry accountable for ensuring reliable supply and by arranging transportation to pick up vaccines when inventories were running low. While the role of incentives in spurring performance is widely acknowledged, international studies^{113,114} also point to some undesirable effects of using financial incentives to meet health care goals, including distortions (ignoring important tasks that are not rewarded with incentives) and gaming (false reporting for the sake of getting incentives). Given these issues, governments would do well to remember that any introduction of PBIs must be accompanied by robust and accurate reporting systems. The need, especially in low- and middle-income countries, is also for more research and multi-disciplinary case studies that offer

¹⁰⁴ United Nations: Global Strategy for Women's and Children's Health. 2010. Geneva:2010:20.

¹⁰⁵ Bhutta, Zulfiqar, Tahmeed Ahmed, Robert E Black, Simon Cousens, Kathryn Dewey, Elsa Giugliani, et al. 2008. Maternal and child undernutrition 3: what works? Interventions for maternal and child undernutrition and survival. *The Lancet*, 371, 417–440.

¹⁰⁶ Campbell, Oona MR, Wendy J Graham. Strategies for reducing maternal mortality: getting on with what works. 2006. *Lancet* 2006; 368: 1284-1299.

¹⁰⁷ Bhutta, Zulfiqar, Mickey Chopra, Henrik Axelson, Peter Berman, Ties Boerma, Jennifer Bryce, et al. 2010. Countdown to 2015 decade report (2000–10): taking stock of maternal, newborn, and child survival. *Lancet* 2010; 375: 2032–44.

¹⁰⁸ Central Bureau of Health Intelligence. 2006. National health profile 2006. New Delhi: Central Bureau of Health Intelligence, Directorate General of Health Services, Ministry of Health and Family Welfare, Government of India. 25; pp. 90–112.

¹⁰⁹ International Institute for Population Sciences. 2007. National Family Health Survey (NFHS-3) 2005-06: India. Vol. 1. Mumbai: International Institute for Population Sciences. pp. 208–14. 436-46.

¹¹⁰ USAID. 2010. Performance-based incentives primer for USAID missions. Washington, D.C. Bethesda, Maryland: Health Systems 20/20, Abt Associates Inc.

¹¹¹ Eichler, Rena, Ruth Levine. 2009. Performance Incentives for Global Health Potentials and Pitfalls. London: Center for Global Development.

¹¹² Eichler, Rena. 2006. Can “Pay-for-Performance” increase utilization by the poor and improve the quality of health services? Discussion paper for the first meeting of the Working Group on Performance-Based Incentives. Washington, DC: Center for Global Development.

¹¹³ Oxman, Andy D., Atle Fretheim. 2009. Can paying for results help to achieve the Millennium Development Goals? Overview of the effectiveness of results based financing. *J Evid Based Med*. 2009;2:70–83.

¹¹⁴ Meessen, Bruno, Jean-Pierre Kashala, Laurent Musango. 2007. Output-based payment to boost staff productivity in public health centres: contracting in Kabutare district, Rwanda. *Bulletin of the World Health Organization*. 2007;85:108-115.

insight into the advantages and disadvantages of PBIs, the key factors for success, and their impact on health outcomes.

Several states in India are employing PBIs to broaden the access to and coverage of health services. A World Bank report (2009)¹¹⁵ on results-based financing, an alternative term for PBI, identified 40 results-based financing initiatives under implementation across 14 states of the country. Twenty-four of these 40 initiatives focused on maternal health services, followed by focus on child health, including immunization, and overall health services. Promotion of institutional deliveries was found to be the key focus area (for 19 out of 40 initiatives). In fact, much of the literature we reviewed on the topic of PBIs also focused on institutional delivery, more specifically the Janani Suraksha Yojana—NRHM’s flagship program for safe motherhood. The JSY scheme is described in detail in Box 4.

The focus on institutional deliveries is warranted: India carries a staggering burden of maternal deaths. A recent UN report¹¹⁶ showed that 56,000 (20%) of the 287,000 maternal deaths worldwide in 2010 occurred in India. Studies point out that more than 80% of the maternal deaths could be prevented or avoided by increasing institutional deliveries or improving the quality of care provided to women.^{117,118,119,120} Placing the promotion of institutional deliveries on high priority, the Government of India launched JSY under the NRHM umbrella in April 2005. Conditional monetary incentives, given to both the mother and the community health worker (accredited social health activist), are a defining feature of the JSY program. The ASHAs are paid incentives for facilitating the pregnant women’s use of antenatal care (ANC), institutional deliveries, and postnatal care.

The ASHAs are voluntary community health workers, selected from the village itself and responsible for providing information and creating awareness about public health services, as well as for mobilizing the community to access and use reproductive and maternal and child health services. ASHAs work on a freelance basis for several government health awareness programs, receiving PBIs for promoting universal immunization, referral and escort services for reproductive and child health (RCH) and other health care programs, and construction of household toilets.

UNFPA’s (2009) concurrent assessment¹²¹ of JSY in Bihar, Madhya Pradesh, Odisha, Rajasthan, and Uttar Pradesh found that the overall percentage of institutional deliveries in rural areas in the five states had increased from about 13% in 1998–1999 (prior to JSY) to about 55% in 2008 (post-JSY). Most mothers in the study mentioned that the ASHA had helped them in getting registered for ANC, contacted them repeatedly during their pregnancy, and informed them about the JSY scheme and the benefits under it. More than three-fourths of mothers in Rajasthan and Uttar Pradesh reported that the ASHA had accompanied them to the health facility for delivery; in other states, nearly two-thirds mentioned this. While the influence of other factors, including the PBIs given to mothers, cannot be ruled out, the ASHAs, payments for whom are solely linked to performance, clearly played an important role in motivating the mothers for institutional deliveries. In their study, Chellan & Paul (2013)¹²² also found that the likelihood of having an institutional delivery was high if the pregnant woman was motivated by ASHA, indicating that although demand-side PBIs encouraged the mother to use institutional delivery, it is ASHA who works as a catalyzing agent within the community.

¹¹⁵ The World Bank. 2009. *Draft report on results based financing in public health sector in India*. MSG Strategic Consulting, Delhi.

¹¹⁶ United Nations Populations Fund. 2012. *Maternal deaths halved in 20 years, but faster progress needed*. Press release. Available from: www.unfpa.org/public/home/news/pid/10730.

¹¹⁷ Ministry of Health and Family Welfare, India. 2005. *National rural health mission (2005-2012): mission document*. New Delhi: Ministry of Health and Family Welfare, Government of India. p. 17.

¹¹⁸ Ministry of Health and Family Welfare, India. 2002. *National Health Policy of 2002*. New Delhi: Ministry of Health and Family Welfare, Government of India. p. 41.

¹¹⁹ World Health Organization. 2010. *Trends in maternal mortality: 1990 to 2008*. Geneva: World Health Organization; p. 45.

¹²⁰ Center for Reproductive Rights. 2008. *Maternal mortality in India: using international and constitutional law to promote accountability and change*. New York, NY: Center for Reproductive Rights; p. 71.

¹²¹ UNFPA. 2009. *Concurrent assessment of Janani Suraksha Yojana (JSY) in Selected States Bihar, Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh*. New Delhi: UNFPA.

¹²² Chellan, Ramesh, Lopamudra Paul. 2013. *Does Janani Suraksha Yojana Show the way to save lives of mother and New born in India?* Presented in the Annual Meeting of the Population Association of America, New Orleans, Louisiana US.

A similar trend was also indicated by a Population Council study (Varma et al. 2010),¹²³ which reported that post-JSY introduction, the rate of institutional delivery jumped to 44% by the end of 2009, significantly up from the percentage reported prior to the scheme. The beneficiaries reported being counseled and motivated by the ASHA, and the ASHA's facilitating role at the time of delivery, as a significant factor in increasing institutional deliveries. Further, the incentive given to ASHAs to promote three ANC check-ups had helped increase contact between pregnant women and ANMs, in turn promoting institutional delivery. One of the study's findings that perhaps more clearly highlights the role of incentives in driving ASHAs' performance, and in turn service utilization, was about the low use of skilled-birth attendant (SBA) services by women who delivered at home. Apart from the unavailability of SBAs, also a key reason, only 1% of all home-delivered women had been advised about using SBA, which the authors linked to ASHAs' lack of interest in promoting services for which they are not paid incentives.

Box 4: Strategies on the Ground—Janani Suraksha Yojana

Janani Suraksha Yojana (JSY)—PBI strategy to improve maternal and child health

Janani Suraksha Yojana (meaning maternal protection scheme) was launched in India under the NRHM in April of 2005. Its key objectives are to reduce MMR and IMR by encouraging institutional deliveries and institutional care among women, particularly among those from households below the poverty line. JSY is one of the largest cash incentive programs for health in the world, with annual expenditure of INR 8.8 billion (about US\$207 million) and an estimated 7.1 million individual beneficiaries (as of 2007–2008).

A centrally sponsored scheme, JSY is implemented in all states and union territories of India, with special focus on the low-performing states. It is implemented through community-level health workers called ASHAs (the acronym means “hope”), who identify the pregnant women and encourage them to access antenatal care, institutional deliveries, and postnatal care. JSY integrates cash assistance with delivery and post-delivery care. The scheme provides a cash incentive for women to deliver in facilities (demand-side PBI). It also provides incentives to providers (supply-side PBI). Supply-side PBI, a strategy for ameliorating HRH issues, is the focus of our description here.

The JSY program has classified states into low-performing states (LPS) and high-performing states, based on the pre-program level of institutional deliveries. The states with an institutional delivery rate of 25% or less were classified as LPS, and those with an institutional delivery rate of over 25% were classified as high-performing states. Accordingly, Uttar Pradesh, Uttarakhand, Madhya Pradesh, Chhattisgarh, Bihar, Jharkhand, Rajasthan, Odisha, Assam, and Jammu & Kashmir were classified as LPS. The graded scale of financial assistance is based on the categorization of states as well as on whether the beneficiary is from a rural or an urban area.

ASHAs in LPS receive cash payments for each woman they refer who 1) registers and 2) delivers at a health facility. The ASHAs receive INR 600 (about US\$10) per delivery in rural areas, and INR 200 (about US\$3) per delivery in urban areas. The cash incentives to ASHA workers are to be given in two installments: the first payment is made at the health facility after registering an expectant mother and the second payment after she has made a postnatal visit with the infant.

The role of conditional incentives in health services utilization was also examined by Debnath (2013)¹²⁴ in his study using household-level data on repeated cross-sections from the District Level Household Surveys II and III). JSY was found to have increased the probability of institutional delivery and increased utilization of prenatal and postnatal care. More notably, though, Debnath's study, using the difference-in-difference estimation strategy, found that although the incentive amount for ASHAs was substantially smaller than that for mothers, the effect of an additional INR 100 (about US\$2) given to a health worker was substantially larger than that additional amount given to a mother. An additional INR 100 incentive to health workers increased the probability of an institutional delivery by 0.6% for the entire period and by 1.2% in the last two years of the study period, while a much smaller effect resulted from giving the extra INR 100 to mothers.

¹²³ Varma, Deepthi S, ME Khan, Avishek Hazra. 2010. Promoting institutional delivery and access to EmOC. New Delhi: Population Council.

¹²⁴ Debnath, Sisir. 2013. Improving maternal health with incentives to mothers vs. health workers: Evidence from India.

Similarly, an additional INR 100 given to ASHA workers significantly increased the probability of prenatal care (by 0.9%), while the effect was negligible if the amount was given to mothers. These results indicate that correctly choosing the agents to incentivize and their incentive amounts may be crucial for maximizing the utilization of public services.

In his paper, Roy (2014)¹²⁵ looked closely at the twin incentive components of JSY—the conditional cash transfer (CCT) given to the mother for delivering in a facility and the performance-based financing (PBF) provided to ASHA for facilitating access to health services. (USAID lists both CCT and PBF as alternate terms for PBI.¹²⁶) Arguing that this mix of CCT and PBF has not been adequately studied, Roy (2014) opines that it is difficult to assess the relative contribution of PBF to improvement in health parameters, as the influence of other ongoing program components (such as CCT and public-private partnership) is not factored in. The pregnant women come to health facilities mostly for their own economic benefit. Whether the same economic boost motivates ASHAs to encourage the beneficiaries to access health facilities is not clear yet. The author pointed to another shortcoming of PBF—its overwhelming focus on the quantity of institutional deliveries, despite the initial intent to meet both quality and quantity targets.¹²⁷ Among other issues, Roy also discussed the possibility that other health workers may be demoralized if freelancing ASHAs receive more financial incentives than those in long-term service.¹²⁸

In the unique context of JSY, then, given the likely contribution of several ongoing factors (such as CCT and state-level initiatives like contracting private health workers to improve service delivery), the improvement in service delivery indicators (primarily institutional deliveries) cannot be directly attributed to the incentives paid to ASHAs. This makes the study of the literature on ASHAs' motivation, self-reported though the data is, critical to broaden the understanding of the role of incentives. Increasing the motivation of health workers to increase efficiency of and access to health services is the driving rationale for provision of supply-side incentives.

Bajpai & Dholakia (2011)¹²⁹ investigated the issue of incentives in their study of variables affecting the motivation and performance of ASHAs. For their field survey, the researchers drew the sample of respondents (ASHAs) from four of NRHM's high-focus states: Bihar, Uttar Pradesh, Chhattisgarh, and Rajasthan. Except in Chhattisgarh, most ASHAs reported financial incentives to be a major motivating factor. Although there were regional variations, overall at least 25% of the ASHAs in the study felt that the monetary compensation they received did not adequately compensate the effort they put in. Important for consideration of PBI on total motivation, this study did not find monetary compensation to be the sole motivating factor for ASHAs. Most ASHAs in all the four states mentioned the desire to improve health facilities in the village as their primary, intrinsic motivating factor. Along with serving their community, the desire to increase their knowledge, become a part of the formal health system, and the prestige associated with the position were reported as the additional reasons for working as an ASHA. Keeping these factors in mind, the authors recommend increasing incentives and ensuring career progression for ASHAs to become part of the formal health system.

Another important consideration highlighted by the Bajpai & Dholakia (2011) study was that almost 60% of the ASHAs complained about delays in receiving their incentives. Delay in ASHAs' receiving incentives was also reported by a cross-sectional observational study by Singh et al. (2011).¹³⁰ The study assessed the PBI system for ASHAs under JSY and other NRHM activities, and examined the ASHAs' satisfaction with the system. In the study, 62.2% of ASHAs reported not getting their incentives on time.

¹²⁵ Roy, Manas. 2014. *Unaddressed issues in Janani Suraksha Yojana in India*. Nepal Journal of Epidemiology, 4.

¹²⁶ USAID. 2010. *Performance-based incentives primer for USAID missions*. Washington, D.C. Bethesda, Maryland: Health Systems 20/20, Abt Associates Inc.

¹²⁷ Ireland, Megan, Elisabeth Paul, Bruno Dujardin. 2011. *Can performance-based financing be used to reform health systems in developing countries?* Bull World Health Organ. 89:695–698.

¹²⁸ Oxman, Andrew D, Alte Fretheim. 2009. *Can paying for results help to achieve the Millennium Development Goals? Overview of the effectiveness of results based financing*. J Evid Based Med. 2:70-83.

¹²⁹ Bajpai, Nirupam, Ravindra H Dholakia. 2011. *Improving the performance of accredited social health activists in India*. New York: Columbia University.

¹³⁰ Singh, Meenakshi, SD Kandpal, KS Negi, Deep Shikha. 2011. *An assessment of performance based incentive system of ASHA in Doiwala Block, Dehradun District*. Indian Journal of Preventive & Social Medicine. Vol. 42, No. 4.

Gopalan et al. (2012)¹³¹ examined the current level of motivation among ASHAs, the factors affecting their level of motivation, and their perceptions and experiences of motivational determinants. The study defined “performance motivation” as the community health workers’ degree of interest and willingness to undertake and improve upon an allotted responsibility towards community health. The ASHAs reported being most motivated by intrinsic factors such as the sense of social responsibility, altruism, and self-efficacy; and by community-level factors including recognition by the community and participation in activities. ASHAs reported being the least motivated by health system factors such as PBIs, workload, and healthcare infrastructure. While some ASHAs were unhappy about the level of monetary and non-monetary incentives received, no association was established between the level of dissatisfaction with incentives and the level of motivation.

Seeking to inform the performance-based payment (PBP) system for ASHAs, Wang et al. (2012)¹³² conducted a literature review of the available evidence on the PBB scheme for ASHAs as well as the global experience of PBP to find applications to India's context. While acknowledging the scheme’s critical role in improving health indicators, the review identified areas of weakness in the PBI model for ASHAs, such as delays in payment, ambiguity about the payment process, inadequacy of data on how incentives affect outcomes, neglect of health services not covered by the PBP scheme, lack of transparency and adequate governance, competition with other providers, and lack of congruity between compensation and expectations. The review identified several successful practices to overcome these challenges, recommending development of implementation guidelines, fixed payment days and electronic transfer of funds, transfer of payment to the community level, regular communication with ASHAs about program implementation, and establishment of a strong management system. The table below, reproduced from the report by Wang et al. (2012), offers recommendations to address the challenges that impede the PBP system for ASHAs.

Table 7: Recommendations to Address Challenges to ASHA PBP System

Challenges	Recommendations
Payment delays	Introduce a multi-level PBP system. Develop a PBP system on institutional basis, rather than at the individual level.
Lack of clarity on the payment processes	Introduce a multi-level PBP system. Develop a PBP system on institutional basis, rather than at the individual level. Improve ASHA training.
Lack of data on how incentives affect outcomes	Continue M&E and operational research efforts. Introduce/strengthen self-assessment with an auditing system.
Lack of transparency and adequate governance	Introduce a multi-level PBP system. Develop a PBP system on institutional basis, rather than at the individual level. Organize state-level workshops regularly to share the experiences and lessons regarding the design, implementation, and evaluation of PBP schemes.
Competition with other providers	Promote full-time ASHAs with appropriate payment. Improve ASHA training.
Compensation not keeping pace with expectations	Promote full-time ASHAs with appropriate payment. Continue M&E and operational research efforts. Combine non-financial incentives with the payment system. Further enhance the relationship between ASHAs and the community. Improve ASHA training.

Source: Wang et al. (2012)

¹³¹ Gopalan, Saji Saraswathy, Satyanarayan Mohanty, Ashis Das. 2012. *Community health workers’ performance motivation: a mixed-methods approach on India’s Accredited Social Health Activists (ASHA) programme*. *BMJ Open*; 2:e001557.

¹³² Wang, Hong, Rajni K Juyal, Sara A Miner, Elizabeth Fischer. 2012. *Performance-based payment system for ASHAs in India: What does international experience tell us?* Bethesda, MD: The Vistaar Project, Intra Health International Inc., Abt Associates Inc.

A key aspect to consider in our discussion on PBIs is the importance of data utilization in strengthening performance and accountability of health care providers. In their report, Belay et al. (2009)¹³³ point to the poor levels of data use in India's health sector. Reasons for low data utilization range from organizational to behavioral and individual factors. At the organizational level, work culture is not adequately focused on results, and resource allocation decisions are based on normative practices, offering little incentive for evidence-based decision-making. Lack of skills in data use and analysis, absence of incentives for data use, and lack of recognition for performance at the workplace hinder data use at the individual level. The authors argue for the need to augment data use, and to this end they recommend setting up and communicating agreed-upon performance indicators at all levels, introducing incentives for data use, undertaking regular performance assessments and rewarding good performers, and training health managers and staff, especially at district and sub-district level, on data use and analysis.

Table 8: Summary of Sources Reviewed on the Theme of Performance-Based Incentives

S.no.	Source Description	Conclusion
1.	Can pay-for-performance increase utilization by the poor and improve the quality of health services? Eichler, Rena. 2006. Discussion paper for the first meeting of the Working Group on Performance-Based Incentives. Washington, DC: Center for Global Development.	Carefully designed financial and material incentives for providers can motivate additional effort, encourage compliance with recommended clinical practice, and inspire innovation in service delivery, including creative approaches to reaching underserved populations.
2.	Draft report on results based financing in public health sector in India The World Bank. 2009. MSG Strategic Consulting, Delhi.	Forty results-based financing initiatives are under implementation across 14 states of India; 24 of the 40 initiatives focus on maternal health services, with the promotion of institutional deliveries the key focus area for 19 out of 40 initiatives.
3.	Concurrent assessment of Janani Suraksha Yojana (JSY) in Selected States Bihar, Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh UNFPA. 2009. New Delhi: UNFPA.	High level of awareness about JSY among the recently delivered mothers in rural areas of the five select states; the overall percentage of institutional deliveries in rural areas in the five states increased from about 13% in 1998–1999 to about 55% in 2008.
4.	Promoting institutional delivery and access to EmOC Varma et al. 2010. New Delhi: Population Council.	ASHAs' counselling of mothers and their facilitating role at the time of delivery played a significant role in increasing institutional deliveries. The incentive given to ASHAs to promote three ANC check-ups helped increase contact between pregnant women and ANMs, in turn promoting institutional delivery. Low use of SBAs in home-delivery indicated ASHAs' lack of interest in promoting services for which they were not given incentives.
5.	Improving maternal health with incentives to mothers vs. health workers: Evidence from India Debnath, Sisir. 2013.	JSY increased the probability of a mother delivering at a health facility and also significantly increased utilization of prenatal and postnatal care. Notably, the effect of an additional INR 100 (about US\$2) given to a health worker was substantially larger than that additional amount given to a mother; correctly choosing the agents to incentivize and their incentive amounts may be crucial for maximizing the utilization of public services.

¹³³ Belay, Tekabe, Nkosinathi Mbuya, Vikram Rajan. 2009. Data utilization and evidence-based decision making in the health sector: Survey of three Indian states. World Bank.

S.no.	Source Description	Conclusion
6.	Improving the performance of accredited social health activists in India Bajpai et al. 2011. New York: Columbia University.	Financial incentives were found to be a major motivating factor for ASHAs, but regional variations were reported. The desire to improve health facilities in the village was a primary motivating factor; overall, at least 25% of the ASHAs felt that the monetary compensation did not adequately compensate their efforts and almost 60% complained about delays in receiving their incentives.
7.	An assessment of performance based incentive system of ASHA in Doiwala Block, Dehradun District Singh et al. 2011. Indian Journal of Preventive & Social Medicine. Vol. 42, No. 4.	In the study district, 86.8% of the ASHAs were fully aware of all incentive-related work, including JSY, family planning, immunization, and toilet promotion; 62.2% reported not getting their incentives on time.
8.	Community health workers' performance motivation: a mixed-methods approach on India's accredited social health activists (ASHA) program Gopalan et al. 2012. BMJ Open; 2:e001557.	Performance motivation was found to be highest for individual-level factors (including the sense of social responsibility, altruism, self-efficacy, job satisfaction) and community-level factors (including recognition by the community and participation in activities), while the health system factors (including incentives, workload, level of healthcare infrastructure) scored the least; no association was established between the level of dissatisfaction with incentives and the level of motivation.
9.	Unaddressed issues in Janani Suraksha Yojana in India Roy, Manas. 2014. Nepal Journal of Epidemiology, 4.	Mix of conditional cash transfer and performance-based financing in JSY has not been adequately studied; it is difficult to assess the relative contribution of PBF to improved health outcomes, as the influence of other ongoing program components (such as CCT and public-private partnership) is not factored in; among other issues, there is overwhelming focus on the quantity of institutional deliveries, despite the initial intent to meet both quality and quantity targets.
10.	Performance-based payment system for ASHAs in India: What does international experience tell us? Wang et al. 2012. Bethesda, MD: The Vistaar Project, IntraHealth International Inc., Abt Associates Inc.	JSY's performance-based payment model has played a critical role in improving health indicators, but there are weaknesses, such as delays in payment, ambiguity about the payment process, inadequacy of data on how incentives affect outcomes, neglect of health services not covered by the PBF scheme, lack of transparency and adequate governance, competition with other providers, and lack of congruity between compensation and expectations. Successful practices to overcome these challenges could include development of implementation guidelines, fixed payment days and electronic transfer of funds, transfer of payment to the community level, regular communication with ASHAs about program implementation, and establishment of a strong management system.
11.	Data utilization and evidence-based decision making in the health sector: survey of three Indian states Belay et al. 2009. World Bank.	Data utilization is critical for strengthening performance and accountability of health care providers; there is a need for setting up and communicating agreed-upon performance indicators at all levels, introducing incentives for data use, undertaking regular performance assessments and rewarding good performers, and training health managers and staff, especially at district and sub-district level, on data use and analysis.



5

SUMMARY AND CONCLUSIONS

5. SUMMARY AND CONCLUSIONS

Securing coverage of essential health interventions across the country requires urgent attention to HRH challenges. Examination of the workforce-related constraints hampering India's public health sector throws up two prominent issues, namely (a) not having enough numbers, aka, numeric inadequacy, and (b) effective use of the existing workforce through improved HR practices.

The issue of numeric inadequacy would need to be addressed by creating new cadres and, as is more popularly proposed, by a massive expansion of the medical education infrastructure. However, in view of the gross shortage of medical teachers and training wherewithal, increasing the number of health workers through more educational/training centers remains a much needed but long-term solution. An overhaul of HR practices, which impinge on the existing health workforce, is possibly a more viable approach for the short term.

Effective governance of the existing human workforce by improving their utilization, training them and upgrading their skills, motivating them through incentives, and increasing their productivity would enable the public health system to realize their full potential.

In countries across the world, innovative HR policies and practices have been launched in response to the HRH issues affecting the health system, especially with a view to attracting and retaining health workers in rural and remote areas. WHO has conducted an extensive literature review and documented such strategies for 19 countries.¹³⁴ WHO recommends four general types of strategies.

- **Educational interventions:** producing health worker cadres to serve exclusively in rural areas
- **Regulatory interventions:** compulsory placement in rural areas, better career progression, and conditional licensing
- **Monetary compensation:** direct and indirect financial incentives for accepting and staying in rural or remote postings
- **Management, social, and environment support:** improved professional and community support

International solutions need to be contextualized to India to adequately address local issues and concerns. Striking socioeconomic and geographical inequities in access to health care further exacerbate the problem of health personnel misdistribution and shortage. Distribution of India's limited health workforce is overwhelmingly skewed in favor of urban areas. While public health service delivery in urban India is also far from satisfactory, almost 74% of the graduate doctors are concentrated in cities, where only 28% of the population resides.¹³⁵ The majority of the rural population (72% of total) is simply unable to access the services of trained allopathic doctors. This disparity in health workforce distribution severely affects the availability and quality of health care services and health outcomes in rural, remote, and underserved geographic areas.

Based on our landscape analysis of the different initiatives and approaches to addressing HRH challenges, we can draw the following conclusions:

- Perhaps no single strategy could alone offer a comprehensive solution to the HRH challenges India is facing.
- The HRH interventions need to be multi-pronged and implemented alongside concerted efforts toward overall health system strengthening, especially targeted infrastructure improvement.

¹³⁴ World Health Organization. 2010. *Global Policy Recommendations – Increasing access to health workers in remote and rural areas through improved retention*. Geneva: WHO.

¹³⁵ Ministry of Health and Family Welfare. 2006. *Report: Task Force on Medical Education for the National Rural Health Mission*. Ministry of Health and Family Welfare, Government of India.

- Any initiatives to augment the numbers or roles of health workers must secure buy-ins from all stakeholders, institute robust training and capacity building mechanisms, and adequately address the concerns and aspirations, for example of career progression, of the different cadres.
- PPPs need to look beyond the outsourcing model to building more long-term relationships to improve the scalability and sustainability of initiatives.
- The need for strong M&E and robust management health information systems cannot be overemphasized.
- Impact evaluations and cost-benefit analysis of HRH initiatives are critical for course-correction to ensure that strategies yield the desired outcomes in terms of coverage, utilization, and quality of service delivery.
- Finally, there is a clear need for more rigorous study and examination of the ongoing HRH initiatives. Evidence-based decision-making must be at the core of any health sector reform.



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