UNIVERSAL HEALTH COVERAGE IN HARYANA

SETTING PRIORITIES FOR HEALTH AND HEALTH SYSTEMS

January 2015

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The Health Finance and Governance Project

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ACRONYMS

AFMC	Armed Forces Medical College
ACSM	Advocacy, Communication and Social Mobilization
ANC	Antenatal Care
ANM	Auxiliary Nurse Midwife
ASHA	Accredited Social Health Activist
AWW	Anganwadi Worker
AYUSH	Ayurveda, Unani, Siddha and Homeopathic
BCC	Behavior Change Communication
BPL	Below Poverty Line
CDC	Centers for Disease Control and Prevention
CHC	Community Health Centre
CMAM	Community-based Management of Acute Malnutrition
CII	Confederation of Indian Industries
CB NAAT	Cartridge-Based Nucleic Acid Amplification Test
CMO	Chief Medical Officer
CPR	Cardiopulmonary Resuscitation
CSR	Corporate Social Responsibility
CSSD	Central Sterile Supply Department
DCE	Discrete Choice Experiments
DEIC	District Early Intervention Centers
DHIS	District Health Information System
DLHS	District-level Household Survey
DMC	Designated Microscopy Center
DMS	Deputy Medical Superintendent
DOTS	Directly Observed Treatment, Short Course
EAG	Empowered Action Group
EQA	External Quality Assurance
FHI	Family Health International
FLW	Frontline Workers
FRU	First Referral Unit
GDP	Gross Domestic Product
GOI	Government of India
GSDP	Gross State Domestic Product
HFG	Health Finance and Governance Project
HIS	Health Information System
HLEG	High Level Expert Group
HMIS	Health Management Information Systems
HMSCL	Haryana Medical Services Corporation Ltd.
HPD	High Priority District
HRH	Human Resources for Health
HRIS	Human Resource Information System
HSHRC	Haryana State Health Resource Center
ICDS	Integrated Child Development Services

IDA	International Development Association
IDD	Iodine Deficiency Disorder
IDSP	Integrated Disease Surveillance Program
IFA	Iron-Folic Acid
IHBP	Improving Healthy Behaviors Program
IIPH	Indian Institute of Public Health
IMR	Infant Mortality Rate
IPD	Inpatient Department
IUCD	Intrauterine Contraceptive Device
IVR	Interactive Voice Recording
IYCF	Infant and Young Child Feeding
JSI	John Snow International
JSSK	Janani Shishu Suraksha Karyakaram
KMC	Kangaroo Mother Care
MAM	Management of Acute Malnutrition MCTS- Mother and Child Tracking System
JSY	Janani Suraksha Yojana
MDR	Multi-Drug Resistant
MIS	Management Information System
MMIY	MukhyaMantri Muft Ilaaj Yojana
MMR	Maternal Mortality Ratio
NBCC	New Born Baby Corner
NBSU	New Born Stabilization Unit
NCD	Non-communicable Diseases
NHM	National Health Mission
NCMH	National Commission on Macroeconomics and Health
NHA	National Health Accounts
NPCB	National Program for Prevention and Control of Blindness
NPCD	National Program for Prevention and Control of Deafness
NPR	National Population Register
NRC	Nutrition Rehabilitation Center NRHM- National Rural Health Mission
OOP	Out of Pocket
OPD	Outpatient Department
PGIMER	Post Graduate Institute of Medical Education and Research
PGIMS	Post-Graduate Institute of Medical Sciences, Rohtak
PHC	Primary Health Center
PHFI	Public Health Foundation of India
PIP	Program Implementation Plan,
PMU	Program Management Unit
PPM	Public-Private Mix
RBSK	Rashtriya Bal Swasthiya Karyakram
RKS	Rogi Kalyani Samitis
RMA	Rural Medical Assistant
RMNCH+A	Reproductive Maternal Neonatal Child Health +Adolescent
RNTCP	Revised National TB Control Program
SAM	Severe Acute Malnutrition
SIHFW	State Institute of Health and Family Welfare
SNEH	Strengthening Nursing Expertise in HIV/AIDs
SLHA	State Level Health Accounts
SNCU	Special Newborn Care Unit

SOP	Standard Operating Procedure
SRS	Sample Registration Survey
STG	Standard Treatment Guideline
TB	Tuberculosis
UHC	Universal Health Coverage
UMS	Urban Malari Scheme
UIDAI	Unique Identification Authority of India
USAID	United States Agency for International Development
VBD	Vector-borne Diseases
VHC	Village Health Committees
VHND	Village Health Nutrition Day
WHO	World Health Organization
YOY	Year Over Year

Glossary:

1 crore = Rs.10 Million (RS.)

10 lakh = Rs.1 Million

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EXECUTIVE SUMMARY

1. **The goal of Universal Health Coverage (UHC)** is to ensure that all people obtain the health services they need without suffering financial hardship when doing so. In India, the reach of the public health system is limited; many people avoid seeking formal care because of its high cost or cultural barriers. As a result, they delay seeking care until they are seriously ill, which means higher costs when they seek care, high morbidity, and sometimes mortality that would have been preventable had care been sought earlier in the course of illness.

   The Government of India is committed to improving health outcomes across the entire population. Based on recommendations of the High Level Expert Group on UHC, the government's Twelfth five-year plan envisions a "transformation of India's health systems to become an effective platform for Universal Health Coverage."

2. **UHC in Haryana**

   The state of Haryana is considering how to achieve UHC. As a first step, this report provides Haryana a five-year road map for moving toward UHC. It identifies key inputs that the state will need to effectively expand coverage of primary and secondary care by 2019/20 and estimates the cost of these inputs – in total, almost Rs.4, 637 crore over the five years, in addition to other government-mandated increases. The report also discusses alternative financing strategies such as general and sin taxes, Corporate Social Responsibility (CSR) mandates, and soft loans to raise this revenue. It also looks at ways Haryana could take advantage of national programs and financial resources to strengthen its own health system. At every point, the study team identified opportunities and platforms for integration and program synergies. In considering UHC, the state will contribute to the knowledge base of what works in extending care, improving its quality, and reducing out-of-pocket (OOP) expenses incurred in seeking healthcare services.

3. **Study Approach and Report Organization**

   In lines with State's evolving healthcare priorities and increasing focus towards UHC, Haryana State along with technical assistance from National Health Mission (NHM), Health Finance and Governance (HFG) Project, Haryana State Health Resource Centre (HSHRC), PGIMER Chandigarh, Public Health Foundation of India (PHFI) and UNICEF has worked together on identifying priority strategies for moving towards UHC as well as estimating investment requirement to adopt the strategies. As per State requirements the study team focused on specific State's objectives for UHC and formulated the priorities and strategies needed to accomplish the UHC goals. The focus is to improve health indicators by strengthening the national programs along with strengthening the cross cutting areas such as human resource for health, governance, financing etc.

   The report describes the current status and reforms required to improve cross-cutting aspects of the health system – the essential package of care; health financing, governance, and information systems and changing health behaviors. It also highlights the overall financing arrangements and key strategies for moving towards UHC.

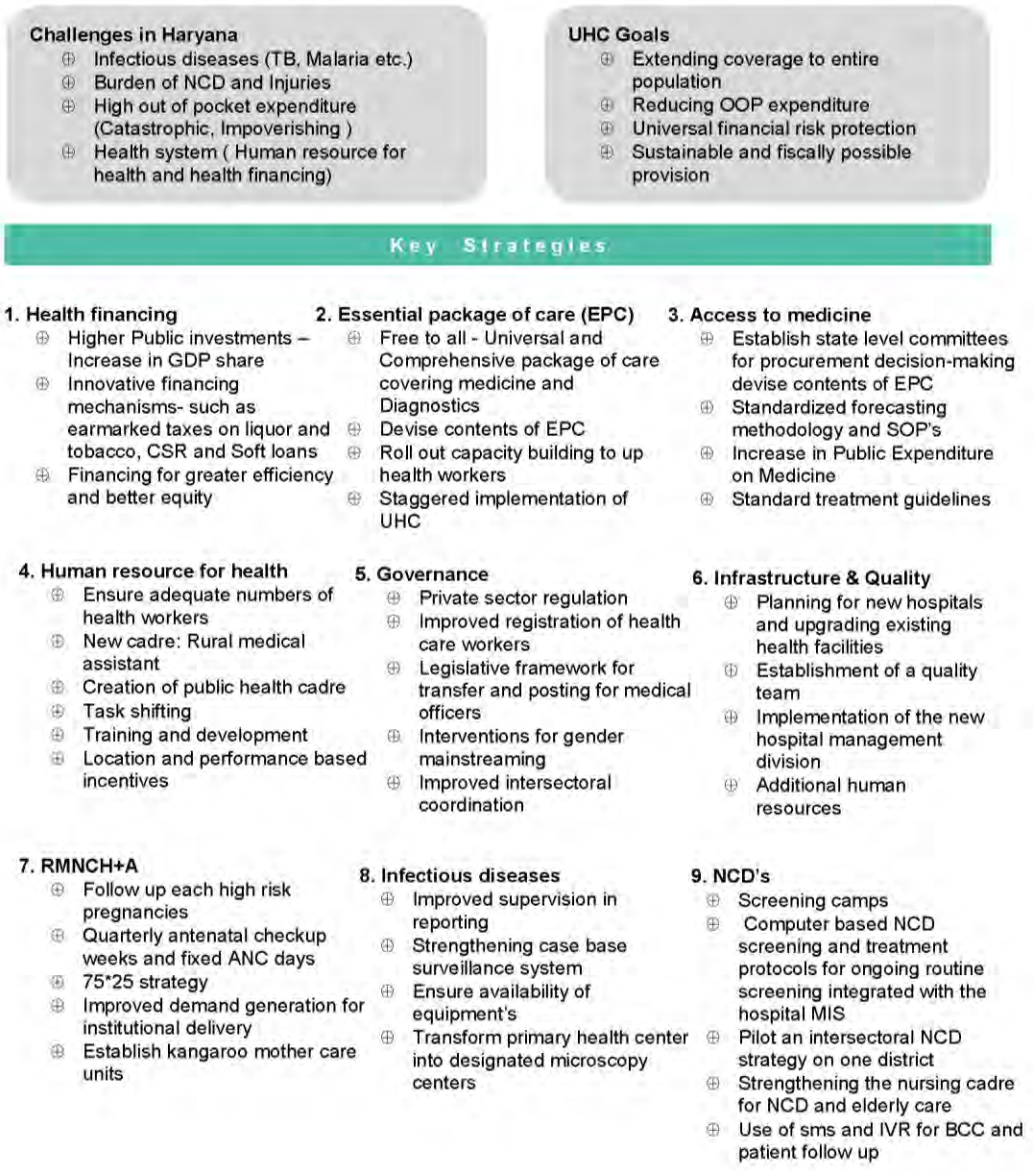
   To gather the information it needed, the study team reviewed the literature and asked different partners and technical leads the following questions:

   - What is the situation now?

- What do we want to achieve?
- What do we need to do?
- How much will this cost?

The report begins with introducing the study, its purpose, methodology, describes the current health status and health infrastructure in Haryana. The report is divided into three sections. The Section 1 looks at cross-cutting aspects of the health system answering above four key questions (See Figure ES-1). Section 2 asks the same questions of the national programs for various diseases and health conditions. Section 3 closes with a discussion of "next steps" required for implementing the recommendations.

FIGURE ES 1 KEY STRATEGIES FOR MOVING TOWARD UHC IN HARYANA



Note: NCD=non-communicable disease, RMNCH+A=reproductive, maternal, neonatal, and child health and adolescent,
GDP = Gross domestic product,
75*25 strategy focuses on tracking high- risk pregnancies, and optimizing the case load of health workers
The key strategies are based on best practices published, expert opinions, and interviews with key stake holders and program officers of the national programs

4. Findings: Strategies and Cost for implementing UHC

4.1 Health Financing for UHC

GDP share to health and overall health budget - Haryana's gross domestic product (GDP) has grown at an impressive rate of 18 percent, but the share of its GDP going to health in 2013/14 is 0.73 percent – far less than the national average of 1.4 percent. Its overall health budget is Rs. 2,804 crores for fiscal year 2013/14. If it continues its incremental budgeting approach of a 10 percent increase year over year (YOY), then the share of GDP going to health will not reach even 1 percent by 2019/20 (Table ES-1). For the year 2015-16, the overall budget required for moving towards UHC will be Rs. 4268 crores, and the budget will have to be increased to Rs. 5852 crores by the year 2019-20. If the additional investments are made as per the estimates, the state's GDP allocation for health will be 1.02% for the year 2015-16 and will increase to 1.14% by 2019/20.

TABLE ES 1: ESTIMATED ADDITIONAL FINANCE NEEDED FOR UHC IN HARYANA (RS. CRORE), 2015/16–2019/20

		2015/16	2016/17	2017/18	2018/19	2019/20	Total
⊕	Infectious diseases*	10	2	2	2	2	18
⊕	NCDs**	11	5	5	5	6	32
⊕	RMNCH+A	96	102	111	121	132	563
⊕	Nutrition***	52	56	61	66	71	306
⊕	Access to medicine and diagnostics	356	385	417	451	488	2,097
⊕	Human resources for health	126	60	17	20	24	247
⊕	HMIS	41	12	13	14	15	95
⊕	BCC	1	0 .5	0 .5	0 .5	0 .5	3
⊕	Quality and health infrastructure	175	221	331	387	143	1,257
⊕	Research	7	3	3	3	3	19
⊕	Total	875	847	960	1,070	885	4,637
⊕	Total budget for moving towards UHC#	4,268	4,579	5,065	5,586	5,852	
⊕	Total ****PHE as % of GSDP (at current prices)	1.02%	1.03%	1.09%	1.14%	1.14%	

Sources: Authors' analysis based on health budget documents, economic survey of Haryana 2013/14, consultation with program officers and department heads in State Department of Health of Haryana

Note: NCD=non-communicable disease, RMNCH+A=reproductive, maternal, neonatal, and child health and adolescent, HMIS=health management information system, BCC=behavior change communication

* Infectious diseases include tuberculosis (TB), malaria, leprosy, and the Integrated Disease Surveillance Program (IDSP)

** NCD cost includes cost of national programs on blindness and deafness.

*** Nutrition includes the cost of National Iodine Deficiency Disorders Control Programme (NIDDSP)

Budget is inclusive of additional cost for UHC

**** PHE- Public Health expenditure

Estimated per capita health expenditure- The per capita expenditure will have to be increased from Rs.1234.85 to Rs.1553.30 in the year 2015-16. The state will be spending an additional Rs. ~300 per capita annually to move towards UHC. The State's GDP share would increase from 0.81 percent to 1.02 percent in the year 2015-16. By the year 2019-20 , the state's GDP share would be 1.14 percent with per capita expenditure of Rs.2017.79 The State is anticipating the reduction of current OOP expenditure from 72 percent to around ~25-30 percent by 2019/20 which in turn reduce and prevent catastrophic health expenditures and people going below poverty line.

TABLE ES 2 ESTIMATED PER CAPITA HEALTH EXPENDITURE (RS.)

	2015/16	2016/17	2017/18	2018/19	2019/20
Per capita expense to the state with UHC cost	1553	1643	1793	1951	2018
Per capita expense to the state without UHC cost	1235	1339	1453	1577	1713
Additional burden to the state	318	304	340	374	305

4.2 Innovative financing mechanisms

CSR, soft loans, and earmarked taxes on liquor and tobacco- are potential sources of additional funding for the state. Haryana has a well-established and well-resourced private sector. With the new Companies Act requiring 2 percent of all profits be dedicated to CSR, there is an opportunity to tap into the private resource base toward strengthening the health system. Of the total finance needed for UHC for next five years, the state is aspiring to source 46 percent from soft loans, 2 percent from CSR, 40 percent from sin taxes (liquor, tobacco and bidi). The remaining 12 percent would be sourced from state's budget. The report discusses scenarios for the sourcing additional investments for UHC in Haryana. Following is one such scenario presented (see Table ES-3)

TABLE ES 3 FINANCING SOURCES FOR UHC IN HARYANA (RS. CRORE)

	2015/16	2016/17	2017/18	2018/19	2019/20
Estimated additional investments required for UHC	875	847	960	1070	885
Soft Loans (e.g. ADB)	400	400	400	400	400
Corporate Social Responsibility	20	20	20	20	20
Sin taxes – Liquor#	300	330	363	399	439
Sin taxes-Tobacco and bidi@	50	55	61	67	73
Additional State Budget	105	42	117	184	*

Notes

In 2013/14, Haryana received around Rs. 3850 Crore from taxes on liquor products itself with tax rate of 25 percent, ~10 percent of which is taken as base to estimate the funds.

@ Sin taxes- Liquor and tobacco are increased at the rate of 10 percent YOY.

* In 2019/20, the state would not be required to source additional budget from the department.

5. Setting priorities for moving toward UHC

The state should focus on extending the coverage of nutrition, RMNCH+A, infectious diseases and NCD. Additionally areas such as improving quality and health infrastructure, universal access to medicine and ensuring adequate human resource for health are equally important and require further strengthening. Firstly, the state should decrease the prevalence of infectious diseases

such as TB and malaria, which respectively consume only 0.14 percent and 0.07 percent of the state's health expenditure. Secondly, the state should fill existing vacant positions and then create and fill additional positions. Improving access to medicines can take lessons from free schemes such as Mukhya Mantri Muft Ilaj Yojana. Some of the priority areas identified and the state should consider are listed below:

Increased access to medicine- Expanding access to medicines would serve as a key driver in achieving universal access to health care. However, to meet this important goal, the report discuss following strategies for the state to adopt-

- Establish state level committees for procurement decision-making
- Standardized forecasting methodology and Standard operating procedures (SOP's)
- Increase the public expenditure on medicine
- Standard treatment guidelines

Nutrition- To ensure that addressing under nutrition is maintained as a priority, following strategies are discussed and estimated cost is presented.

- Setting up State and District Nutrition Cells within Health Department
- Intersectoral Coordination
- Expand and Strengthen Village Health and Nutrition Day (VHND) package
- Managing Malnourished Children in the Facility and Community
- Strengthen Ante-natal Care through Subcentres and Maternal package at the Nutrition Rehabilitation Centres
- Integrate iodine testing into existing laboratory infrastructure

RMNCH+A- To further strengthen RMNCH+A program and increasing the coverage and scope of services on lines with UHC, the following strategies are recommended

- Quarterly Antenatal Checkup weeks, Fixed ANC days and Quality improvement teams at the district level and increase the use of spacing methods
- Follow up each High-Risk Pregnancies (HRP) and Improve demand generation for institutional delivery
- Rationalize facility use & patient referrals
- Implement clinical protocols
- Establish Kangaroo Mother Care Units

Quality and health infrastructure availability- Delivery of Quality Health care is fundamental to ensure UHC. Large investments in health are required in building infrastructure for increasing accessibility to improved quality of care. The report further discussed the following key strategies that can be adopted-

- Planning for new hospitals and upgrading existing health facilities
- Establishment of a Quality Team
- Implementation of the new Hospital Management Division
- Additional human resource

Human resource for health- The program officer highlighted the importance of increasing the health workforce to expand the reach of the health system. To address this shortage, the study team proposed strategies for recruiting staff for two new cadres, a public health cadre and a cadre of rural health assistants. There is a need to increase health worker motivation and engagement. The shortage of health workers is less of a problem than is the low motivation and engagement of existing health workers, caused in part by poor workforce stability, with its frequent transfers. The team has highlighted both location- and performance-based incentives to address these challenges.

Strengthening the governance framework- The state should establish mechanism for intersectoral coordination. The areas that threaten health outcomes and contribute to high morbidity in the state are under-nutrition and NCDs. Because a range of contributing social, environmental, and behavioral determinants contributes to these problems, solving them requires an intersectoral response. Yet many officials told the study team that intersectoral coordination is difficult to achieve in the existing siloed working environment, in which officials must adhere to their chain of command.

Prioritize low-coverage districts- Focusing UHC efforts on the districts with the poorest health coverage will be the most efficient way to improve the state's overall aggregate health indicators. Mewat and Palwal have high unmet need for health services, and poor health behaviors.

Integrated case-based surveillance- Case-based surveillance is implemented by the IDSP and the Revised National TB Control Program, but the private sector does little reporting of disease incidence and mortality. Incentives and improved regulation is needed to increase reporting from the private sector.

6. Next Steps

The state would need further work to prioritize interventions, identify costs, advocate for the plan, and provide oversight and support.

Some of the key steps to be taken

1. Appoint a UHC steering committee
2. Decide which interventions to prioritize and adopt
3. Conduct a more rigorous costing
4. Obtain broad stakeholder support
5. Develop step-wise implementation plans and monitoring frameworks
6. Provide oversight and support

INTRODUCTION

The goal of universal health coverage (UHC) is to ensure that all people obtain the health services they need without suffering financial hardship when doing so. In India, the reach of the public health system is limited; many people do not seek formal care because of its high cost or because of cultural barriers. As a result, people delay care seeking until they are seriously ill, which means higher costs when they seek care, high morbidity, and sometimes mortality that would have been preventable had care been sought earlier in the course of illness.

The Government of India (GOI) is committed to improving health outcomes for the entire population. One of the strategies it plans to use to do this is health assurance; which will ensure that the entire population can access select health services at no cost at the point of care.[1] This builds on the emphasis that the twelfth five-year plan places on providing "accessible, affordable and quality healthcare for all." Based on the recommendations of the High Level Expert Group (HLEG) on UHC, the twelfth five year plan envisions a "transformation of India's health systems to become an effective platform for Universal Health Coverage."

Since the overall responsibility for provision of health services lies with the State, Haryana is stepping forward to examine how UHC can be achieved in the state. The first step is to measure the extent to which the population is already covered by free health services (primary, secondary, and tertiary), the resources available to establish UHC, and how coverage can be increased in a systematic manner. In this way, the state hopes to contribute to the knowledge base of what works in extending the reach of care, improving its quality, and reducing out-of-pocket (OOP) expenses incurred in seeking services.

Scope and methodology

This report provides a five-year road map to move Haryana toward UHC, identifying key inputs required to provide 100 percent coverage of health care. The report focuses on strategies to strengthen the public health system by leveraging the resources and priorities of national programs. At every point, the study team identified opportunities and platforms for integration and program synergies. The study team collected data from different partners and technical leads to answer several questions: *What is the situation now? What do we want to achieve? What do we need to do? and How much will this cost?* (See Table 1.)

TABLE 1: GUIDING QUESTIONS AND DATA SOURCES

Question	Sources
What is the situation now?	Consult Concurrent Evaluation, DLHS 4, and HMIS data
What do we want to achieve?	Reference WHO or other global standards, and national standards or targets
What do we need to do?	Reference published literature and national-level documents with best practices suitable to the Haryana context to fill the existing gaps. Clarify operational details.
How much will this cost?	Calculate costs based on inputs provided by experts and state officials as well as documents such as NHM PIPs and departmental documents

[1] Expert Group on Health Assurance, Government of India (2014). Health Assurance for All Indians. New Delhi

Note: DLHS=District-level Health Survey, HMIS=health management information system, WHO=World Health Organization, NHM=National Health Mission, PIP=Programme Implementation Plan

This was not a comprehensive costing exercise; rather, its estimates are based on existing data. Additionally, it did not intend to be an end point; rather, it is a starting point for a process of reform. This report's final chapter outlines next steps, including prioritizing intervention options, clarifying cost and implementation details, and setting out an action plan with leadership responsibilities clearly demarcated and ongoing implementation monitoring.

The report begins with an overview of the current coverage of services and the health status of the population, as well as the existing health care infrastructure. Briefly, coverage varies widely between districts, from only 12 percent in Mewat to 71 percent in Kurukshetra; and between services, from only 12 percent for comprehensive postnatal care, to 100 percent for non-communicable diseases (NCDs) and other illnesses.

The next step was to clarify universal coverage of what? The team outlines the contents of the essential package of care, including care, medicine, and diagnostics that will be made available to all.

The project took a systems approach, identifying cross-cutting systems factors as reform priorities. In a context where health is typically delivered through vertical programs, achieving UHC requires systems thinking to identify efficient approaches across all programs and health areas. To strengthen the overall health system, the cross-cutting domains of finance, access to medicines, human resources, infrastructure, information systems, governance, and behavior change communication (BCC) all need concerted attention. Chapters dedicated to each of these areas are in Section 1 of the report.

However, the team also assessed the needs of the different vertical national programs, as services are currently delivered through them. While achieving UHC will require health systems strengthening at the state level, the national programs still have a vital role to play, ensuring that specific disease and health areas are addressed and resources are allocated. Section 2 of the report provides an overview of the national programs. Each chapter was developed in close consultation with the relevant program officers, to identify what is required to extend their program's current coverage to all citizens.

The report closes with suggested next steps to take UHC forward in Haryana, namely, prioritize and adopt solutions; conduct more rigorous costing; get broad stakeholder support, and develop step-wise implementation plans.

BACKGROUND: HEALTH STATUS IN HARYANA

Introduction

Haryana is a small state, 4,421 sq. km, located in the north of India. It has 21 districts that comprise 6,841 villages and 154 towns. It has a population of 2,553 lakh, 2 percent of the country's population. Sixty-five percent of the population lives in rural areas[2]; however, differences in health indicators between urban and rural populations are minimal. Sixteen percent of the population is scheduled caste.

Haryana is classified as a high-income state, along with Delhi, Punjab, Maharashtra, and Gujarat. Typically, the state's health indicators are better than the national average. For example, the average life expectancies of 68.9 years for males and 71.3 years for females are higher than the Indian average.

The Haryana health system has also developed a number of innovations that have been scaled up nationally. Indra Bal Swasthya Yojana is a child-screening program developed in Haryana in 2010, and implemented at schools and anganwadi centers. The program screens children for disease, deficiency, and disability – to identify children in need and ensure they get the services they require. This was scaled up nationally as the Rashtriya Bal Swasthiya Karyakram (RBSK) project by the NHM in 2013. Additionally, the Janani Shishu Suraksha Karyakram (JSSK), a package of care for pregnant women and infants up to one year also first begun in Haryana, in June 2011. Most recently, the Mukhyamantri Muft Ilaaj Yojana (MMIY) scheme was launched in 2014. This program provides a package of free secondary and tertiary services including 215 surgeries, all basic lab investigations, and all inpatient services. The underlying aim of this program is that no one is denied services at any government hospital – treatment of the patient is the first priority, and payment is secondary. This is an excellent foundation on which to build UHC.

Furthermore, the state has partnered with key technical assistance agencies such as the Post Graduate Institute of Medical Education and Research (PGIMER) Chandigarh, the Health Finance and Governance (HFG) project with Abt Associates, the DELIVER Project with John Snow International, FHI 360's Improving Healthy Behaviors Program (IHBP), and WHO India for implementation research.

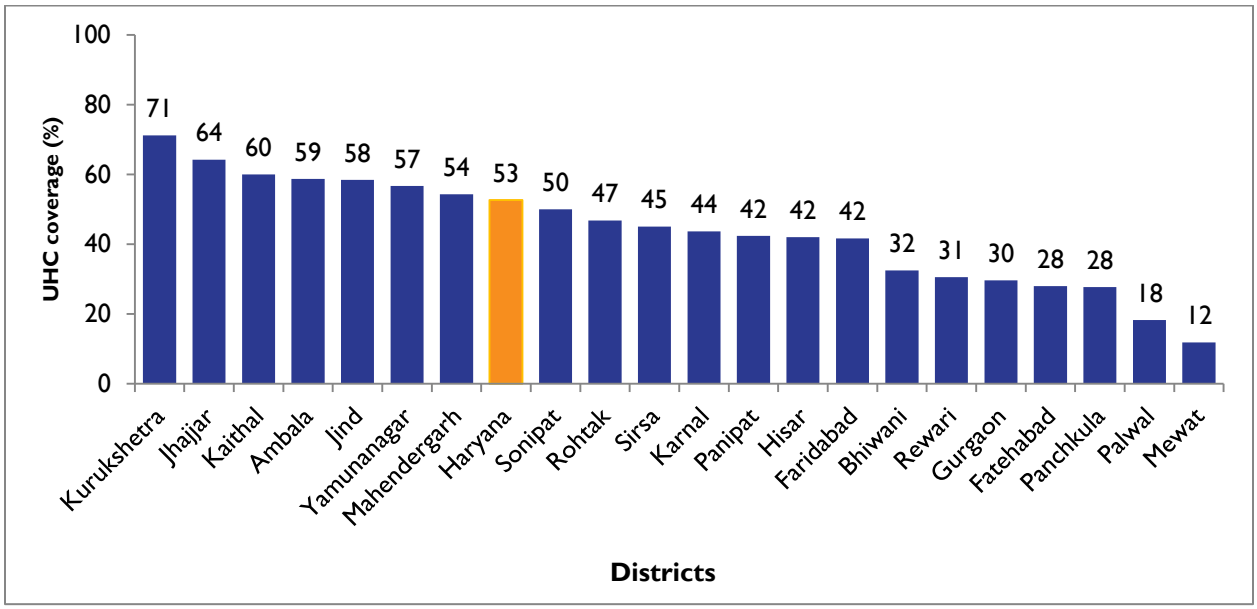
However, Haryana has not made the same kind of gains as the rest of the country since the introduction of the National Rural Health Mission (NRHM), and health outcomes certainly do not reflect the high level of economic development. As Figures 1 and 4 in the following sections demonstrate, the infant mortality rate (IMR) hovers close to the national average; the maternal mortality ratio (MMR) is 30 points lower than the national average, but has remained static while the national average has dropped. In fact, Haryana is even sliding backward on some indicators; for example, if DLHS 3 and DLHS 4 are compared, unmet need for contraception has doubled. For this reason, the health status of Haryana requires attention and support to ensure that the relative wealth of the state is reflected in the health of the people.

[2] Director General, Health Services, Haryana Health Services at a glance (2012/13). Panchkula, Haryana, India.

What is the current coverage of health services?

UHC means delivering an essential package of care to all citizens. In Haryana, PGIMER Chandigarh developed a UHC index, which gives us an overview of health service coverage, using 2014 data from a survey of 8,000 households.[3] In Figure 1, we can see that coverage varies widely between districts, from only 12 percent in Mewat to 71 percent in Kurukshetra; Figure 2 shows it also varies between services, with only 12 percent reached for comprehensive postnatal care to 100 percent for NCDs and other illnesses.

FIGURE 1: COMPOSITE UHC COVERAGE IN 21 DISTRICTS OF HARYANA STATE

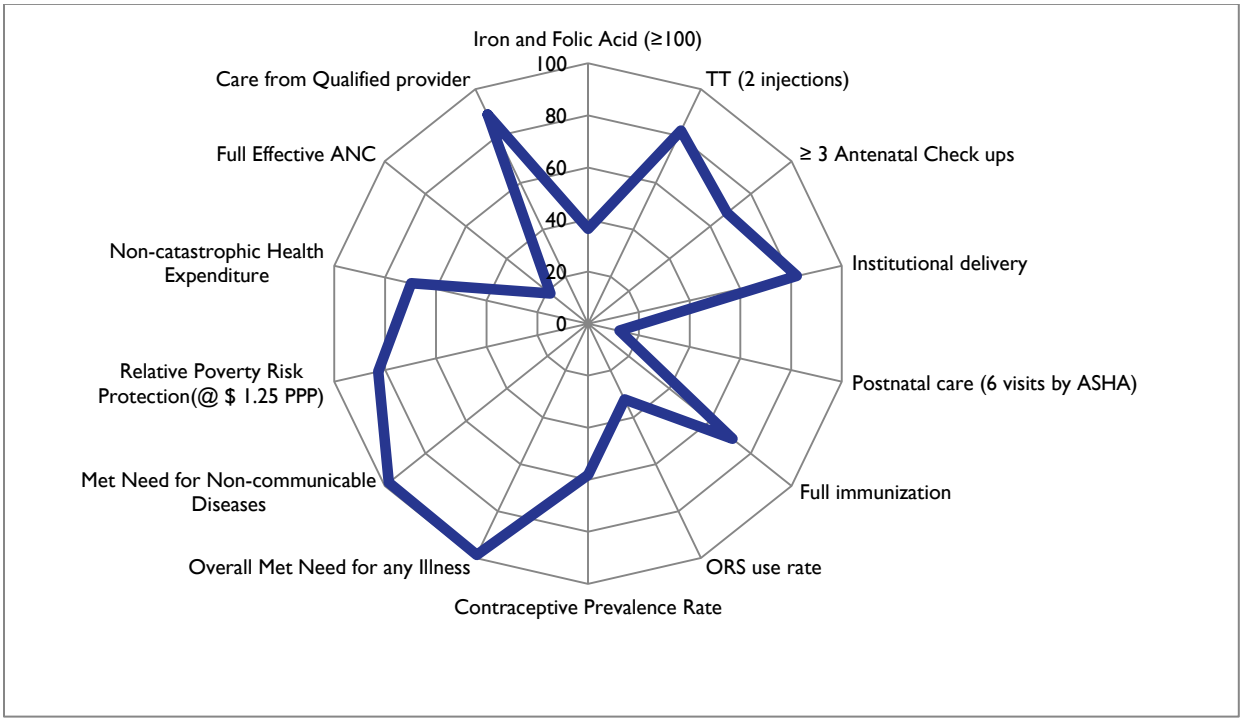


Data source: Haryana N. Concurrent Evaluation of NRHM Haryana (June 2014) Biannual report.

While coverage varies widely across districts, there is little difference between rural and urban indicators, and in fact the urban indicators are typically worse – a dynamic that is different from the rest of the country. This highlights the fact that there are huge and expanding populations of urban poor, clustered around Gurgaon and Faridabad, who are underserved by the Haryana health system.

[3]Prinja S., Bahuguna P., Gupta R., Sharma A., Aggarwal A., Kumar R. (2014). A Composite Indicator to Measure Universal Health Care Coverage in India: Way Forward for Post-2015 Health System Performance Monitoring Framework. Submitted to Bulletin of the World Health Organization.

FIGURE 2: EXTENT OF UHC IN HARYANA STATE, INDIA, 2012/13



Data source: Haryana N. Concurrent Evaluation of NRHM Haryana (June 2014). Biannual report.

Coverage of Specific Services

Maternal health

As we saw in Figure 2, the MMR in Haryana has not been reducing at the same rate as in the rest of the country. This is despite the fact that the institutional delivery rate increased from 49 percent in 2006 to 84 percent (ranging from 44 percent in Mewat district to 97 percent in Ambala district) in 2013 (DLHS 4). Most of the gains in institutional deliveries are in the public sector, which accommodates 65 percent of all deliveries.[4] Additionally, public sector utilization for delivery is pro-poor, with almost 78 percent in lowest two quintiles using public facilities, and 47 percent in richest quintile.[5,6] The increase in institutional deliveries is due to a range of interventions under the NRHM, including the Janani Suraksha Yojana scheme and Haryana's "delivery huts."[7] Still, coverage of priority interventions remains insufficient due to inequities and social exclusion, and the quality of existing programs remains suboptimal. There is more work to be done to bring maternal mortality down.

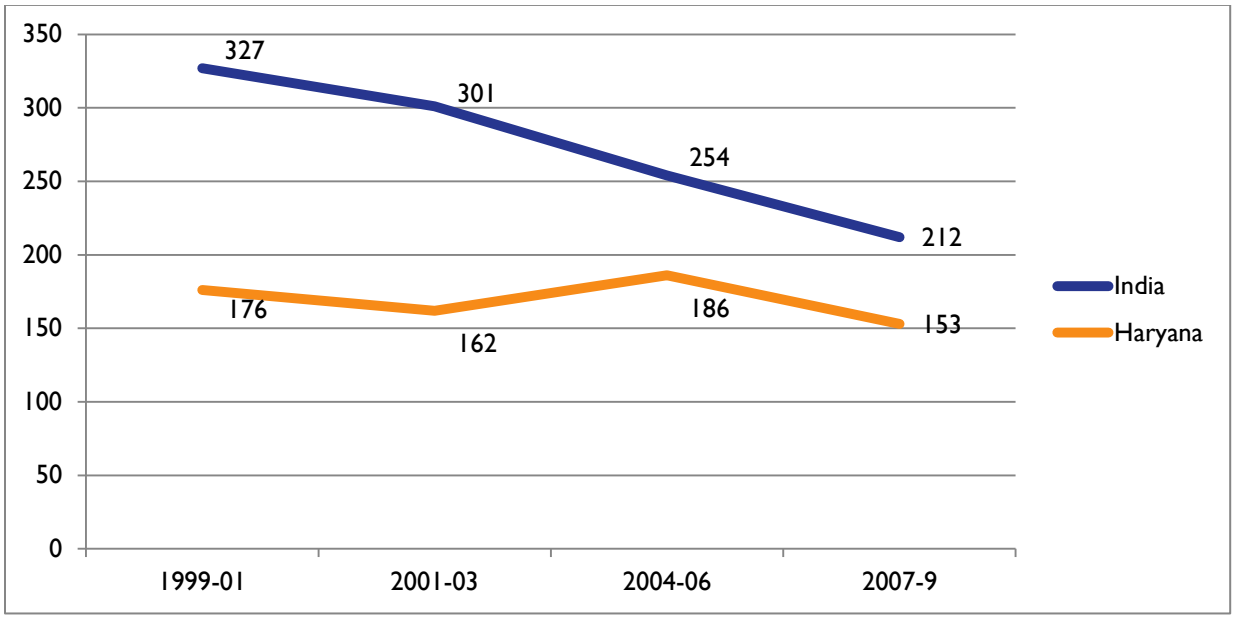
[4]Prinja S., Bahuguna P., Gupta R., Sharma A., Aggarwal A., Kumar R. (2014). Coverage and Financial Risk Protection for Institutional Delivery: How Universal is Provision of Maternal Health Care in India? (Draft Paper).

[5]Prinja S., Kumar M., Pinto A., Jan S., Kumar R. (2013). Equity in Hospital Services Utilisation in India. Economic and Political Weekly Vol. XLVII (12).

[6]Prinja S., Bahuguna P., Gupta R., Sharma A., Aggarwal A., Kumar R. (2014). Coverage and Financial Risk Protection for Institutional Delivery: How Universal is Provision of Maternal Health Care in India? (Draft Paper).

[7]Central Bureau of Health Intelligence. Delivery Huts to Promote Safe Delivery in Rural Areas, Harayana. http://cbhi-hsprod.nic.in/listdetails.asp?roid=107, accessed 16 September 2014.

FIGURE 3: MMR IN INDIA AND HARYANA



Data source: Sample Registration Survey 2013

Newborn and child health

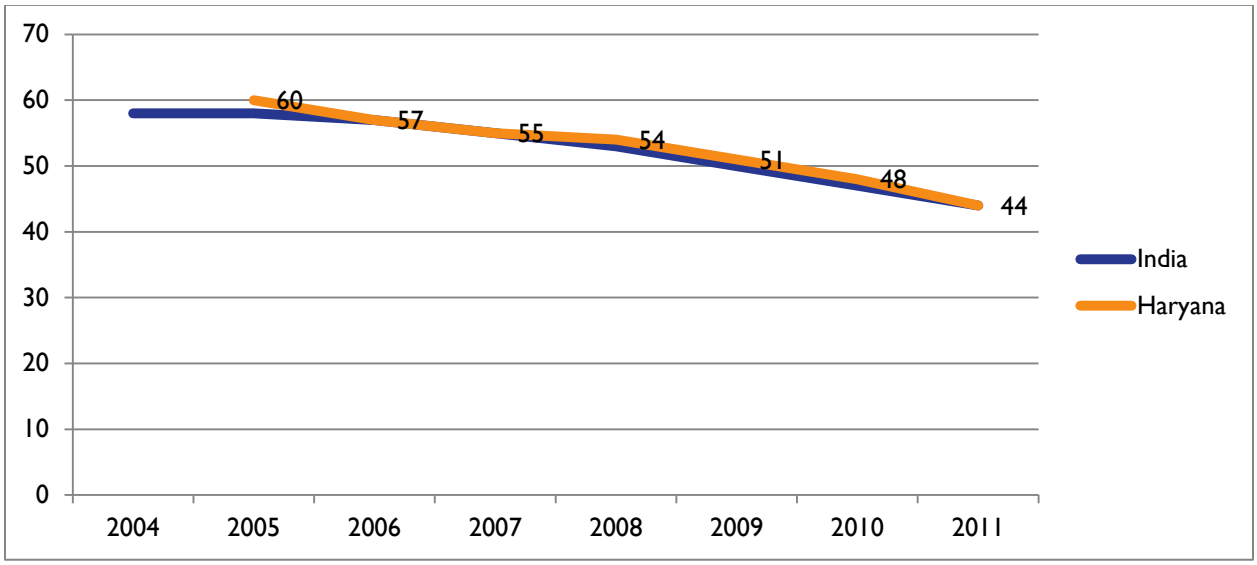
The increase in institutional deliveries has had a positive effect on the rate of breastfeeding within one hour of birth, which has increased substantially from 17.4 percent in 2007 to 54.9 percent in 2012 (see Figure CA-1.o in chapter appendix). This simple and equitable practice of breastfeeding has many health benefits for newborns and infants and therefore should be performed after every birth. However, the percentage indicates that there is still improvement to be made in the quality of care of facility-based births.

Full vaccination coverage actually dropped in many high-income Indian states (see Figure CA-2.o in the chapter appendix). For example, it dropped from 59.6 percent to 52.1 percent in Haryana. Concurrent Evaluation data show variation by district, with 26 percent in Mewat and 94 percent in Kurkshetra. This may be due to the singular focus given to the Pulse Polio campaign, which consumes a huge amount of health workers' time and leads to neglect in delivering vaccinations for other diseases.[8] However, full vaccination is much lower in Haryana than Punjab or Maharashtra – states with comparable income.

These losses in vaccination coverage are reflected in the mortality rate, which is not decreasing fast enough. Figure 4 illustrates the IMR in Haryana is just above the India average. More than half of all under-5 deaths are in the neonatal age group; prevention of these deaths needs to occur in the delivery room.

[8]Paul, V.K., Sachdev, H.S., Mavalankar, D., Ramachandran, P., Sankar, M.J., Bhandari, N. Kirkwood, B. (2011). Reproductive health, and child health and nutrition in India: meeting the challenge. *The Lancet* 377(9762), 332-349

FIGURE 4: IMR IN INDIA AND HARYANA



Data source: Sample Registration Survey 2013

The double burden of chronic and infectious diseases

Socio-economic development is typically associated with improved health status, but it also means a transition from a high prevalence of infectious diseases to a high prevalence of chronic and non-communicable diseases (the epidemiological transition).

In non-EAG (Empowered Action Group) states including Haryana, NCDs cause 51 percent of deaths in people under 70. For example, India has the second highest incidence worldwide of diabetes mellitus, with approximately 12-14 percent of the adult population having this condition.[9] Furthermore, the burden of NCD will continue to increase during the next 25 years as a consequence of the rapidly ageing population. Most chronic diseases are common and often occur as co-morbidities. Risk factors for chronic diseases (tobacco use, high sugar diet, sedentary lifestyle) are highly prevalent in the Indian population overall.

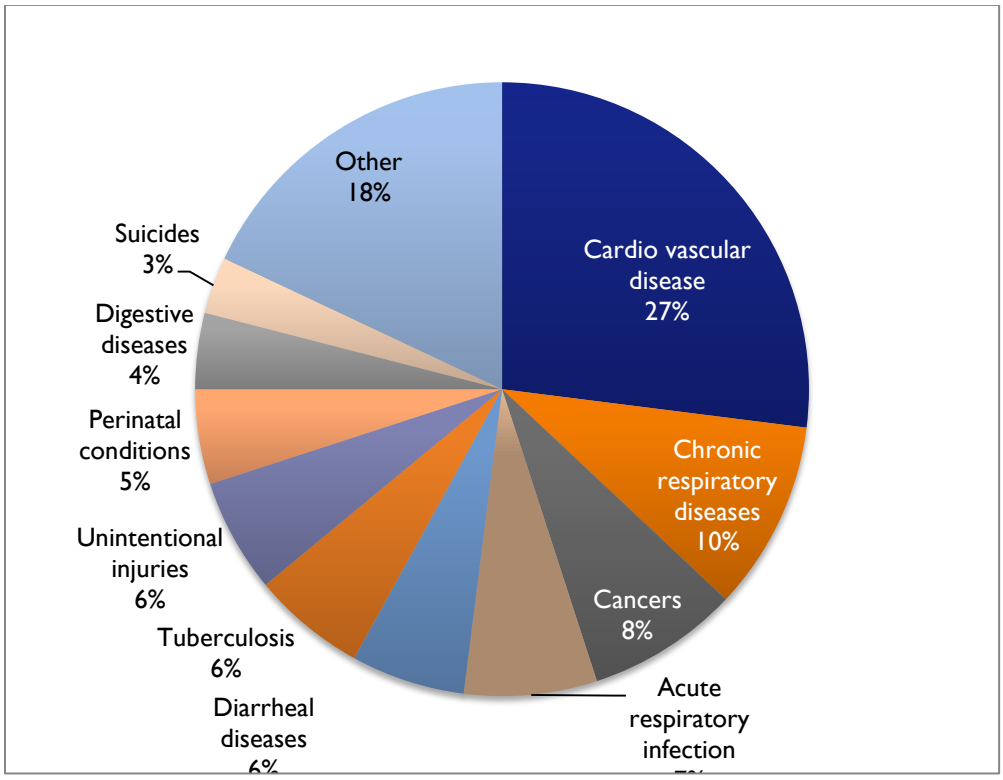
However, the wealthier states in India – including Haryana – haven't completely vanquished infectious diseases.[10] The top six causes of death in people aged 25-69 in non-EAG states include 8 percent dying of diarrheal diseases and 11 percent dying of tuberculosis (TB). For children under 5 in the non-EAG states, 7 percent of deaths are due to infectious diseases, 12 percent to diarrheal disease.[11] The figure 5 provides causes of deaths in adults in non-EAG state including Haryana.

[9]Patel, V., Chatterji, S., Chisholm, D., Ebrahim, S., Gopalakrishna, G., Mathers, C. Reddy, K.S. (2011). Chronic diseases and injuries in India. The Lancet, 377(9763), 413-428.

[10]John, T.J., Dandona, L., Sharma, V.P., Kakkar, M. (2011). Continuing challenge of infectious diseases in India. The Lancet, 377(9761), 252-269.

[11]Jha, P., Laxminarayan, R. (2009). Choosing health: an entitlement for all Indians. Centre for Global Health Research.

FIGURE 5: CAUSES OF ADULT DEATH IN NON-EAG STATES



Data source: Registrar General of India and Centre for Global Health Research 2009, quoted in Jha 2009

Nutritional status

DLHS 4 (2012/13) reveals that 31.9 percent of under-5 children are stunted, 36.2 percent are underweight, and 32.3 percent are wasted; 18.6 percent are severely wasted (see Table 2). These high rates of under-nutrition put children at a lifetime disadvantage for health and wellness.[12] Haryana has a much worse nutritional status than its neighbor Punjab, with an 8.5 percentage point difference in severe wasting for children under 5. Additionally, many indicators have worsened over time, indicating this is an area that needs urgent attention. There are high levels of anemia among pregnant women, only 22 percent receive full antenatal care (ANC), and only 30 percent consume the required Iron-Folic Acid (IFA) supplementation (DLHS 4). This leads to low birth weight babies and under-nutrition in later life.

[12]United Nations Children's Fund (2013). Improving child nutrition: The achievable imperative for global progress. New York

TABLE 2: NUTRITION INDICATORS OVER TIME: DLHS 3 AND DLHS 4

Percentage	DLHS 3 2007/08	DLHS 4 2012/13
(Domain 1): Care for women – before, during and after pregnancy		
Pre-pregnancy		
Women with 10 or more years of schooling	25.9	37.5
Marriage under 18 years	15.9	5.9
Adolescent pregnancies	4.3	2.9
Pregnancy		
Pregnant women who received antenatal checkup in first trimester	82.1	55.1
Women who received full ANC	21.8	13.2
Pregnant women who consumed 100 or more IFA during pregnancy	29.0	29.5
Lactation		
Women who had an institutional delivery	46.9	76.9
- Government institution	15.0	42.3
- Private institution	31.9	35.3
Unmet need for family planning	16.0	30.4
(Domain 2) Coverage of infant and young child feeding practices		
Children under age of 3 years breastfed within one hour of birth	17.4	54.7
Children 0-5 months exclusively breastfed	9.4	64.0
Children 6-9 months receiving breastfeeding along with complementary food	74.1	56.5
(Domain 3) Coverage of access to water, health and sanitation services		
Access to drinking water facility	96.0	99.0
Access to improved toilet facility	51.0	84.0
Children aged 9-35 months received at least one dose of Vitamin A Supplementation in last six months	46.3	61.4
Children 12-23 who received who received full immunization	59.6	52.1
Diarrhea in the last two weeks and received advice/treatment	82.0	68.7

Gender

India ranks 132 out of 134 countries in gender equity in health and survival.[13] One of the most startling indicators in Haryana is the sex ratio of 870, suggesting that it is a particularly hostile place for women. These skewed population numbers are caused by a number of factors, including sex-selective abortions (with national prevalence ranging from 3 percent to 17 percent in different studies)[14] and preferential treatment given to boys, increasing their chances of survival. Results of studies from around India have shown a care-seeking bias against girls. For every two male neonates, only one female is admitted to a health facility.[15]

Early age at marriage and childbearing also negatively affect maternal and neonatal outcomes in much of northern India, including risk of interpersonal violence. Unfortunately, child marriage is something that Haryana has not completely vanquished. The median age at marriage is 20.8, up from 19.7 in 2007/08 (DLHS 3).

What is the current OOP expenditure on health services?

One of the key goals of UHC is to reduce OOP spending. According to Concurrent Evaluation data[16], the mean spending for an outpatient consultation was Rs 588 in the public sector and Rs 1118 in the private sector. This varies widely between districts, from an average of Rs 8,795 in Sirsa to Rs 162 in Palwal in the public sector. For hospitalization, the mean expense is Rs.13, 378 in the public sector and Rs. 22,923 in the private sector. Even in public sector the amount varies greatly by district, from a mean of 2,990 in Palwal to a mean of Rs.51, 586 in Karnal.

[13] Raj, A. (2011). Gender equity and universal health coverage in India. The Lancet, 377(9766), 618-619.
[14]Paul, V.K., Sachdev, H.S., Mavalankar, D., Ramachandran, P., Sankar, M J., Bhandari, N., Kirkwood, B. (2011). Reproductive health, and child health and nutrition in India: meeting the challenge. The Lancet 377(9762), 332-349.
[15]Paul, V K., Sachdev, H.S., Mavalankar, D., Ramachandran, P., Sankar, M J., Bhandari, N., Kirkwood, B. (2011). Reproductive health, and child health and nutrition in India: meeting the challenge. The Lancet 377(9762), 332-349.
[16] Prinja S, Aggarwal AK, Kumar R. (2014). 2nd Biennial Report of Concurrent evaluation of National Rural Health Mission, Haryana. School of Public Health, Postgraduate Institute of Medical Education and Research (PGIMER, Chandigarh).

SECTION I

HEALTH SYSTEMS STRENGTHENING: ADDRESSING CROSS-CUTTING SYSTEMIC ISSUES

1. HEALTH FINANCING

1.1 *Introduction*

Financial protection is the critical element of UHC, putting financial reform at the center of this health systems strengthening effort. In India, health is financed by multiple sources; including the central government, state governments, and private OOP spending. A low level of public spending on health care has resulted in poor-quality service delivery in public facilities; leading to people's increased utilization of the private sector and increased OOP spending.

1.2 *What is the situation now?*

- India spends only 4.0 percent of its gross domestic product (GDP) on health, one of the lowest levels globally. The government covers only about 20 percent of total health expenditure – more than 70 percent comes from household OOP spending, one of the highest levels of OOP spending in the world (see Annex A, Figure A-1).[17]
- Haryana spent only 0.73 percent of its gross state domestic product (GSDP) on public health with a budget of about Rs.2804 Crores in the year 2013/14.
- Despite being a wealthy state, Haryana's public expenditure on health is less than comparable other states: In 2011/12, the per capita public expenditure on health was least for Haryana as compared to other states such as Rajasthan, Punjab Tamil Nadu and Himachal Pradesh. (See Table3). The state undertook measures to increase the public expenditure on health. Despite there is a significant increase in percentage increase in per capita expenditure, the per capita public expenditure is still lower than other states.

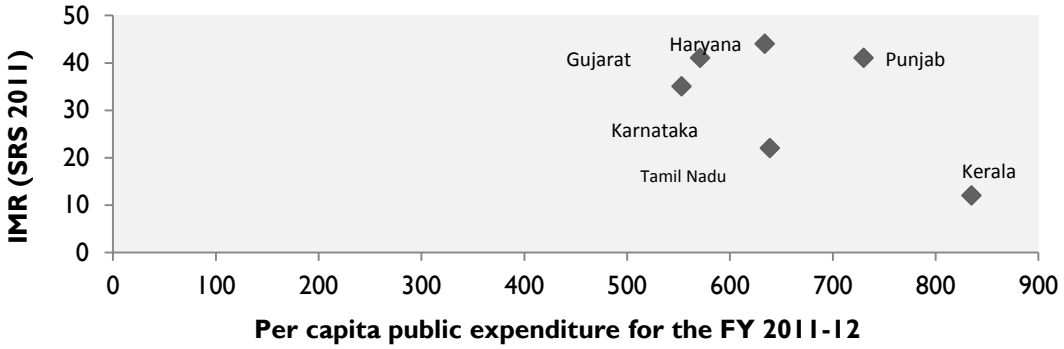
TABLE 1: PER CAPITA HEALTH EXPENDITURE IN SELECTED STATES AND AT NATIONAL LEVEL, (RS) .2003/04

State	Per capita public (Rs.) 2011-12	Per capita public (Rs.) 2012-13
Haryana	454	689
Punjab	560	828
Rajasthan	482	555
Tamil Nadu	626	791
Himachal Pradesh	1,174	1,483

Source: NHA Cell, MOHFW (2012-13). Health sector financing by Centre and States/UTs in India.

[17] Reddy, K.S., Patel, V., Jha, P., Paul, V.K., Kumar, A.K., Dandona, L. (2011). Toward achievement of universal health care in India by 2020: a call to action. The Lancet 377(9767), 760-768.

FIGURE 6: IMR AND PER CAPITA EXPENDITURE FOR SELECTED STATES, 2011/12



Source: SRS 2011, MOHFW 2012

- Punjab and Kerala have been able to reduce IMR with higher per capita expenditure on health (See Figure 6).
- The state budget allocation for the health sector is been lower, compared to other states such as Tamil Nadu and Punjab. In 2011-12, Rajasthan spent around 6.1 percent of their total budget to health, Tamil Nadu 5 percent, whereas Haryana spent 3.7 percent of their total state budget. The per capita government health expenditure has also been lower.
- Out-of-pocket (OOP expenditure remains the major source of financing for health care in Haryana. This means that nearly 30 percent of hospitalization expenditure is catastrophic, with 16.1 percent of households pushed below the poverty line (Table 4).[18]

TABLE 2: FINANCIAL RISK PROTECTION INDICATORS, HARYANA, 2012/13

Indicator (Financial risk protection)	Coverage* (%)
Catastrophic health expenditure due to hospitalization	30.3
Catastrophic health expenditure due to delivery (public sector)	1.6
Catastrophic health expenditure due to delivery (private sector)	22
Poverty impact due to hospitalization expenditure (@1.25$)	16.1
Poverty impact (public sector) due to delivery expenditure (@1.25$)	2.9

Source: Prinja S, Aggarwal AK, Kumar R. (2014). 2nd Biennial Report of Concurrent evaluation of National Rural Health Mission, Haryana. School of Public Health, Postgraduate Institute of Medical Education and Research (PGIMER, Chandigarh)

- The state government has been successful in increasing access to institutional delivery. The Concurrent Evaluation conducted by PGIMER[19] found that Haryana has 82 percent coverage of institutional delivery. Out of the total, institutional deliveries in the state, 65 percent were carried out in public hospitals. More than 60 percent of the women delivering in the public sector incurred no cost. The average OOP expenditure in the public sector was Rs 771 compared to Rs 12,479 in the private sector. This demonstrates that schemes like JSSK – cashless public sector service delivery – have been successful in reducing OOP expenditure on institutional deliveries.

[18]Prinja S., Bahuguna P., Gupta R., Sharma A., Aggarwal A., Kumar R. (2014). A Composite Indicator to Measure Universal Health Care Coverage in India: Way Forward for Post-2015 Health System Performance Monitoring Framework. Submitted to the Bulletin of the World Health Organization.

[19]Prinja S., Bahuguna P., Gupta R., Sharma A., Phogat A., Aggarwal A., Kumar R. (2014). Coverage and Financial Risk Protection for Institutional Delivery: How Universal is Provision of Maternal Health Care in India? Not published.

- The Concurrent Evaluation Survey conducted by PGIMER, Chandigarh and NHM Haryana, found that a major share of OOP expenditure in both the public and private sector goes to medicines. In public sector hospitals, 37 percent of OOP spending on medicines occurs in the Inpatient Department (IPD) admissions and 32 percent occurs in Outpatient Department (OPD) visits.
- The state government has allocated additional funding of approximately Rs. 54 crore from 2014/15 through the dedicated scheme MMIY.
- Despite some successful initiatives, the state will need to improve the fiscal space for the health sector by identifying new financing sources, and better allocating existing ones, to significantly affect key indicators.

1.3 What do we want to achieve?

- Universal protection of accessing health care against financial risk.
- Increased public spending on health care, such that resources are in place to cover the cost of 'necessary' health care services for everyone and move from 0.7 percent of the GSDP to 1.14 percent of the GSDP by 2019/20.
- Increased efficiency of the health system, such that the health care services are provided at a cost that is economically sustainable and fiscally possible.

1.4 What do we need to do?

1.4.1 Invest in UHC: Where and how much?

As noted earlier, the current level of financing is not enough to address the key health system gaps that are obstacles to UHC. The team recommends strategies and areas of investment for health system transformation: Subsequent sections of this report identify strategies to increase service coverage and estimate levels of investment required over the next five years (see Annex A, Table A-1).

Here, the budget impact of the UHC essential health package and level of public funds required to reach the health expenditure goal of 2.5 percent of the GSDP are estimated (Table 5).

TABLE 3: HEALTH BUDGET PROJECTED SITUATIONS FOR UHC IN HARYANA

Description	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Total public health expenditure as % of GSDP (at current prices)	0.73%	1.03%	1.32%	1.62%	1.91%	2.21%	2.50%
Public health expenditure to reach goal of 2.5% by 2020# (Rs. crore)	2,804	4,221	5,774	7,475	9,318	11,291	13,385
Public health expenditure as 10% year on year increase (Rs. crore)	2,804	3,084	3,393	3,732	4,105	4,516	4,967
Gap to reach target of 2.5%* (Rs crore)	-	1,136	2,381	3,743	5,212	6,776	8,417
Estimated investment required to gear up health systems to achieve UHC** (Rs. crore)			875	847	960	1,070	885

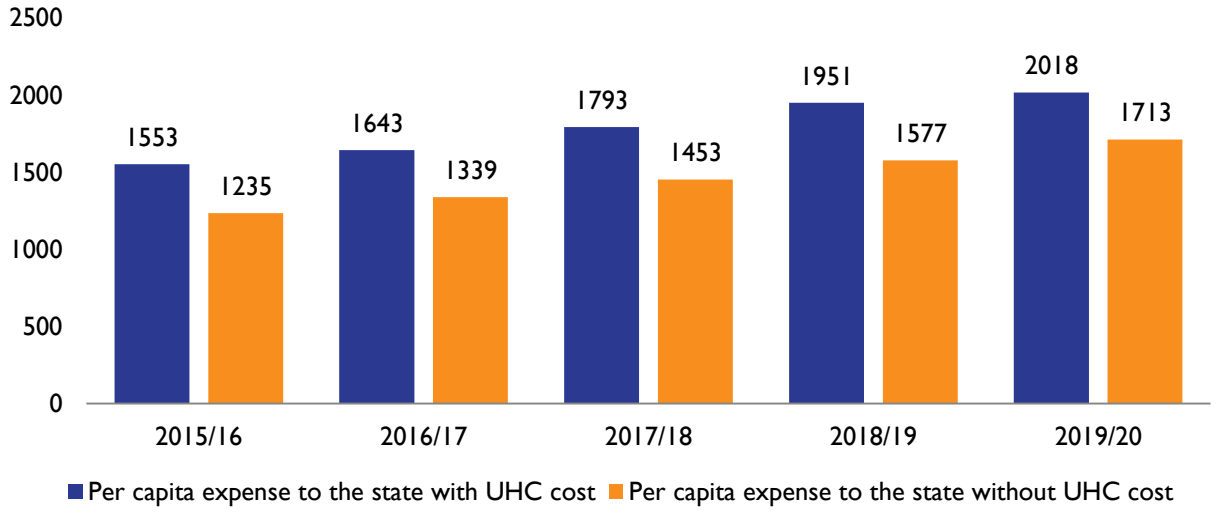
*2.5% of GDP toward health is the GOI target for every state

** The final cost is based on inputs given by program officials

As per Ministry of Health and Family Welfare guidelines, each state needs to increase its budget allocation for health by at least 10 percent year on year (YOY). If Haryana does only this, its estimated allocation in 2019/20 will be Rs. 4967 crores. The target set by the GOI is a 2.5 percent allocation of GSDP to health by 2019/20. To reach this target, Haryana's estimated budget will have to be Rs.13, 385 crores, Rs. 8,417 crores more than the ministry requirement. Further, based on analysis by the study team and inputs from key officials of the Health Department, the state requires an additional Rs. 4,637 crores over the period of next five years, 2015/16 to 2019/20, to achieve UHC.

Haryana needs to spend an additional Rs.300 per capita year on year to move towards financing UHC. For the year 2015-16 the per capita expense to the state will be Rs. 1553.30 and this would increase to Rs. 2017.79 by 2019-20. If the state continues to increase budget at 10 % YoY, the per capita expense for the year 2015-16 will be Rs. 1234.85 and this would increase to Rs.1712.64 by 2019-20. The additional cost required for moving towards UHC will be approximately Rs. 300 per capita yearly.

FIGURE 7: PER CAPITA PUBLIC HEALTH EXPENDITURE 2015/16 TO 2019/20



Source: Authors analysis

As noted above, the current levels of public spending on health is way too low to reach universal coverage of essential services, with adequate financial risk protection. The overall responsibility for provision of health services lies with the State. Hence the Government of Haryana needs to increase its outlay for health. To raise the revenue needed for UHC, the state needs to identify financing sources like additional state and central funding, external aid like soft loans from the World Bank for health systems strengthening, and corporate social responsibility (CSR) funds.[20]

1.4.2 Investigate potential sources of new revenue

To generate these resources, Haryana should explore innovative financing options such as increases in "sin" taxes – which in addition to increasing the health budget will also help reduce the disease burden by discouraging consumption of products like alcohol and tobacco that are detrimental to health. The sources that State is considering are soft loans, earmarked taxes on liquor and tobacco and CSR funding. Of all the sources, INR 2000 crores is proposed to be availed via soft loans through Asian Development Bank which ~ 50 percent of the funds required for UHC. From the year 2015-16 onwards, INR 400

[20] Kumar, A.K., Chen, L.C., Choudhury, M., Ganju, S., Mahajan, V., Sinha, A., Sen, A. (2011). Financing health care for all: challenges and opportunities. The Lancet, 377(9766), 668-679.

crores is needed yearly for UHC from soft loans. In addition to that ~40 percent of the amount could be sourced through earmarked taxes on liquor and tobacco. INR 2137 crores could be possibly generated over the period of five years from sin taxes. The state will require only INR 448 crores over the period of five years after making innovative financing arrangements. The table 3 below highlights the year wise breaks up of potential sources of funds (See table 5)

TABLE 4: POTENTIAL SOURCES OF ADDITIONAL FUNDING FOR THE HEALTH SECTOR IN HARYANA (RS. CRORE)

	2015/16	2016/17	2017/18	2018/19	2019/20
Estimated additional investments required for UHC	875	847	960	1070	885
Soft Loans (e.g. ADB)	400	400	400	400	400
Corporate Social Responsibility	20	20	20	20	20
Sin taxes – Liquor#	300	330	363	399	439
Sin taxes-Tobacco and bidi@	50	55	61	67	73
Additional State Budget	105	42	117	184	*

Source: Authors analysis

Notes

In 2013/14, Haryana received around Rs. 3850 Crore from taxes on liquor products itself with tax rate of 25 percent, ~10 percent of which is taken as base to estimate the funds.

@ Sin taxes- Liquor and tobacco are increased at the rate of 10 percent YOY.

* In 2019/20, the state would not be required to source additional budget from the department.

1.4.2.1 Corporate social responsibility

The introduction in September 2013 of the Companies Act, which mandates companies to do CSR spending, has opened a new window of opportunity of engaging the private sector. Permissible CSR activities (per schedule VII) include project investments in poverty, malnutrition, preventive health care, sanitation, and safe drinking water. Nationwide CSR commitments from companies are estimated to be around Rs. 5,000 crore annually.[21]

The NRHM Haryana has been proactive and already initiated dialogue with and sought the participation of the private sector in strengthening health systems in the state. In a meeting held with the Confederation of Indian Industries, the NRHM proposed that the private sector contribution can be made either through market-based partnerships or by way of corporate citizenship initiatives.

Based on the survey conducted by NGObox.org[22] about 17 of the largest 500 companies operating in India are headquartered in Haryana (see Annex A, Table A-2). The overall CSR commitment of these 17 companies is about Rs.235 crores in 2014/15. The Department of Health may source around half (Rs.117.5 crores) of this commitment to improve maternal and child health services, nutrition, geriatric care, health camps, and so forth.

1.4.2.2 Earmarked taxes on alcohol and tobacco

Haryana should explore the possibility of the earmarked taxes on products such as alcohol and tobacco helps in raising revenue for health promotion and services. These taxes are also effective in reducing consumption of these harmful products in various segments of the population. Article 6 of the WHO Framework Convention on Tobacco Control recognized tax measures and also provides guidelines for

[21] http://articles.economictimes.indiatimes.com/2014-09-30/news/54475231_1_csr-spending-csr-ambit-average-net-profit accessed on 15th November 2014

[22] http://www.ngobox.org/ accessed on 15th November 2014

implementing these measures.23 For 2013/14, Haryana received around Rs.3, 850 crore from its 25 percent tax on alcohol. A 10 percent or 2.5 percentage point increase in the tax on liquor alone has the potential to raise approximately Rs. 385 crore for UHC in Haryana. In July 2014, the GOI also introduced a double-digit increase in the cigarette tax.24 It should be noted that these taxes should be earmarked for the purposes of achieving UHC and should not be transferred to the general pool.

1.4.2.3 Soft loans

Currently the fiscal availability of the government to fund health is limited by its many other fiscal commitments. Therefore, Haryana should consider applying for soft loans from the World Bank to fund the public health system and its infrastructure requirements. Tamil Nadu, Karnataka, Punjab, and Maharashtra have all taken out World Bank loans for health sector financing. The World Bank recently announced that it will continue to provide concessional credit to India for infrastructural and education purposes.[25] Its International Development Association (IDA) is offering soft loans up to 2017. These loans have a very low interest rate (1.25–2.8 percent) and long maturities, ranging from 25 years to 40 years.[26] Currently the World Bank charges 2 percent as interest along with 0.75 percent as commitment charges and 1.2 percent as service charge.[27] (See Annex A-1 for the experiences of Karnataka and Tamil Nadu with World Bank funding.)

Asian development bank (ADB) in India, as of December 2013, 210 loans amounting to Rs. 189000 crores are approved, Rs. 1042.8 crores for 10 grants, and Rs. 1572 crores for 348 technical assistance projects[28]. For health sector and social protection ADB's cumulative lending and grants financed by ADB special funds is Rs. 120 crores (0.6 percent of the overall ABD funding in India 1966-2013)

Below is the brief description on ADB Loan requirements for developing countries-

- ADB offers the public sector different types of financial products, which includes loans, grants, technical assistance, guarantees, and debt management products.
- ADB uses a classification system to determine the eligibility of developing member countries (DMCs) to borrow from ordinary capital resources (OCR) or the Asian Development Fund (ADF), which provides grants and loans on concessional terms. The Asian Development Fund (ADF) bridges the development gap in Asia and the Pacific, home to both the world's fast-rising and most vulnerable economies. ADF is a major instrument of concessional financing that has supported equitable and sustainable development in the region. India is classified in Group B countries which is a blend of OCR and ADF.
- Lending Rate: Following are the indicative lending rates published on ADB website as on 9th Jan 2015 depending upon the tenure of the loan period.

[23] http://apps.who.int/gb/fctc/PDF/cop5/FCTC_COP5_8-en.pdf, accessed on 30 November 2014.
[24] http://news.yahoo.com/india-sharply-hikes-sin-tax-cigarettes-185645780.html, accessed on 30 November 2014.
[25] http://www.india-briefing.com/news/world-bank-extends-loans-india-infrastructure-education-development-8542.html/, accessed on 27 Sep 2014.
[26] IDA resources http://siteresources.worldbank.org/IDA/Resources/Seminar%20PDFs/73449-1271341193277/IDATermsFY12.pdf, accessed on 27 Sep 2014.
[27] As per discussion with a finance consultant from the Karnataka Health System Development and Reforms Project.
[28] Asian Development Bank and India fact sheet , (2013).

Floating Rate [a b c]		Fixed Swap Rate [a b c]						
6 month LIBOR/Euribor		(% per annum)						
			3 year	5 year	7 year	10 year	15 year	20 year	30 year
USD	0.36130	USD	1.194	1.613	1.854	2.074	2.283	2.391	2.466
JPY	0.14300	JPY	0.188	0.248	0.343	0.513	0.830	1.063	1.255
EURIBOR	0.16800	EURO	0.229	0.362	0.520	0.770	1.053	1.209	1.349

The loan may be taken by State in the name of National Health Mission, Government of Haryana. The loan repayment may be undertaken

1.4.3 Need-based resource allocation for greater equity

Mechanisms for allocating resources in an equitable way is an important and complex aspect of funding health services at the district level, especially when the resources are limited and the allocation process is subject to political interference. Poor allocation leads to inefficiency and poor performance of health facilities.[29]

Incremental funding is currently the norm, rather than equity- or need-based funding. Haryana needs to develop a mechanism to do need-based resource allocation from the state to the district level on a pilot basis. Various guides are available to allocate resources to the next level government down.[30] Following are the key criteria for a need-based resource allocation formula:

- Socio-economic and demographic indicators of the population
- Needs of the population based on districts' morbidity/mortality profile
- Utilization of services by the vulnerable population groups

Most of the data needed to improve allocation and efficiency have already been collected, as part of the Concurrent Evaluation conducted by PGIMER, Chandigarh. The evaluation found that allocation to primary levels of care provision should be increased to about 60 percent, while secondary and tertiary services should get about 25 percent and 15 percent, respectively. Resources should go to public health care delivery, rather than purchasing care from the private sector via insurance mechanisms. Inefficiencies in procurement of drugs and other supplies should be corrected through centralized procurement and decentralized distribution. State Level Health Accounts, an international tool to track the flow of resources in the health sector, is currently being institutionalized in the state with support from USAID's HFG Project.

[29] Mahapatra P, Berman P. (1995). *Resource allocation for public hospitals in Andhra Pradesh, India*. Health Policy Planning Mar 10(1):29-39.

[30] In 2002, the U.K. Department for International Development developed a guide book for allocating public resources focusing on pro-poor approaches. http://dendrytes.com/Blog/download/health_economics/Diff_Financing_of_RCH_Services.pdf, accessed on 28 Sep 2014. The National Health System Resource Centre has conducted various studies on different financing for reproductive and child health services for the state. http://web.iaincirebon.ac.id/ebook/moon/PublicPolicy-Service/Allocating_resources_final.pdf, accessed on 28 Sep 2014.

1.5 *How much will this cost?*

- The overall cost for attaining UHC in Haryana is estimated to be Rs.4, 637 crores in addition to the regular health budget over the coming five years. This amount should be allocated to various interventions and innovations described by the concerned program officials (see Table 7).
- If the government of Haryana decides to follow the GOI-proposed norms of states allocating 2.5 percent of the GSDP to health, its budget for health would be Rs.13, 385 crores.

TABLE 5: KEY STRATEGIES AND ESTIMATED COST (HEALTH FINANCING), (RS. CRORES) 2015/16-2019/20

Current situation	Standards or target to achieve	Key strategies to fill gap	Estimated Cost
Low public health expenditure and high OOP expenditure	~ 4,637* for UHC Increase in public health expenditure from the current 0.7% of GSDP to 2.5% of GSDP	Identify alternative sources of revenue for health care: taxes, CSR, soft loans, etc.	Not applicable
Inequities in district-level resource allocation	Equitable resource allocation	Develop criteria for allocation of funds to districts	Not applicable

2. ESSENTIAL PACKAGE OF CARE

2.1 *Introduction*

UHC cannot cover all health services, but instead provides a well-publicized package of essential services that should address the priority health needs of the population.[31] Designing and costing this essential package of care is crucial for determining the resource requirements of UHC. By limiting the number of services, the needed human resources, capacity building, and procurements can be assured, even in the context of human resource and facility shortages.

2.2 *What is the situation now?*

- In theory, the public health system provides a full spectrum of health services, and is open to everyone.
- The NRHM benefits package is not specified, but most funding goes to primary and secondary care.
- In reality, most care is sought in the private sector.[32]
- OOP payments comprise as much as 80 percent of all health expenditures and frequently send families into poverty.

2.3 *What do we want to achieve?*

- An essential package of services, including medicines and diagnostics, that is available free to all
- A reduction in OOP expenditures
- Improved health outcomes by prevention and care of infectious and non-communicable diseases.

2.4 *What do we need to do?*

2.4.1 Design the essential package of care

Health conditions that constitute the major share of India's disease burden were identified through both literature review and causal analysis. The resulting package, with "basic" and "comprehensive" components, is in Annex B. This can be adapted to the specific disease profile of Haryana. The standard treatment guidelines prepared by the Armed Forces Medical College, Pune (2005) and National Commission on Macroeconomics and Health (2005) have been used and updated here.

2.4.2 Roll out capacity building to up-skill health workers

The essential package of care must consist of services that are of high quality. This means that service providers must be trained in the essential package. Efficiencies will be created where services can be shifted to staff nurses, Auxiliary Nurse Midwives (ANM) or even Accredited Social Health Activists (ASHAs) (for tasks such as routine monitoring of chronic conditions).

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[31] Jha, P., Laxminarayan, R. (2009). Choosing health: an entitlement for all Indians. Centre for Global Health Research.
[32] Nagpal, S. (2013). Expanding health coverage for vulnerable groups in India. World Bank, Washington.

2.4.3 Stagger implementation of the essential package

The essential package of care is most likely to be successful if implemented incrementally. A proposed timeline is included in Table 8. For the first two years, the focus is on strengthening basic services, including free medicines, at the Primary Health Center (PHC), Community Health Center (CHC), Block Hospital, and District Hospital levels.

A comprehensive package would be introduced during the second year of implementation for Below Poverty Line (BPL) patients. In the fourth year, the reach of the package would expand to include all vulnerable sections of the population (e.g., based on Right To Food Beneficiaries). In the fifth year, the entire population may be enrolled under the UHC based on its success and intake.

TABLE 6: PROPOSED TIMELINE FOR UHC IMPLEMENTATION

	2015/16	2016/17	2017/18	2018/19	2019/20
Basic Services+ Universal Medicine					
Basic Services+ Universal Medicine+ Comprehensive (BPL)					
Basic Services+ Universal Medicine+ Comprehensive (Vulnerable)					
Universal and Comprehensive					

2.4.4 Publicize the contents of the essential package of care

Platforms such as self-help groups and Panchayats can be used to make the essential package widely known, so people know what they can expect free of charge. This will also help generate local demand and accountability to ensure quality service provision.

2.4.5 Strengthen health systems

Key components of the health systems including financing, human resources, information systems, and BCC, need to be strengthened using sustainable and feasible strategies. These key strategies will be discussed further in subsequent chapters.

2.5 *How much will this cost?*

This section discusses cost estimates for UHC strategies found in earlier studies conducted by the Public Health Foundation of India (PHFI) and from the National Commission on Macroeconomics and Health report. However, feasibility of raising such levels of funds would be a challenge; therefore, the study team did its own costing of individual strategies, discussed in later chapters.

According to the National Commission on Macroeconomics and Health, the additional resources required to deliver the basic and comprehensive packages would be around Rs.2, 607 crores.[33] The majority of this amount would have to go to the district hospital and sub-divisional hospital (Rs.1, 665 crores) and CHCs (Rs.837 crores). Other expenditures here include administrative costs and the costs

[33] Ministry of Health and Family Welfare, Government of India (2005). Report of the National Commission on Macroeconomics and Health, New Delhi.

of providing immunizations, family planning services, preventive services, and BCC. It has to be noted here that the expenditure included cost of care delivered at the district hospital and below.

If the basic package and all medicines are provided in 2015/16, an estimated Rs. 1,753 crores would be required to be spent up to the district level. If the poor were provided comprehensive package starting in 2016/17, along with the UHC basic package, an estimated Rs. 2,649 crores would have to be invested (Table 9). Ultimately, if the comprehensive package were delivered to the entire population, Rs. 6,427 crores would be required.

TABLE 7: KEY STRATEGIES AND ESTIMATED COST (ESSENTIAL PACKAGE OF CARE) (RS. CRORE) 2015/16-2019/20

Current situation	Standards or target to achieve	Key strategies to fill gap	Estimated Cost
No defined package of care	Clearly defined essential package of care	Consult various stakeholders to determine locally applicable package Assess resources required and available	Up to district level Rs. 1,700-2,600 crores based on package to start with
High OOP expenses on medicines	Increased resources from government and other sources	Emphasis on access to medicines and gradual expansion of services	Estimated cost is discussed in access to medicine chapter (3)

3. ACCESS TO MEDICINES

3.1 *Introduction*

Access to essential medicines is critical for saving lives, reducing suffering, and improving health. The availability of most essential drugs in India is not a serious concern; it is rather that access to medicines in the public health system has been poor. Improving such access would improve health outcomes and is a key driver in achieving UHC. However, to meet this important goal, national, state, and local government policies and strategies must be grounded in the principles of universality, equity, and efficiency.

3.2 *What is the situation now?*

- Over the past two years, Haryana has made significant progress in the creation of a centralized procurement system. Warehouses have been set up and an online logistics web portal, developed in-house with support from National Informatics Centre has started operating. The Haryana Medical Services Corporation Ltd (HMSCL) has been set up. However, e-procurement has not started and funds are yet to be transferred from the state budget to the HMSCL.
- Per capita OOP expenditure on health increased significantly in Haryana between 1993/94 and 2011/12 (Annex C, Table C-1). Almost three-quarters (74 percent) of this expenditure is on medicine. This highlights that the high cost of medicines is a source of financial vulnerability.
- Since 2009/10, the budget allocation for drugs in Haryana has grown more than 2.5 times, with increases in both the state and NRHM budgets (Annex C, Table C-2). In 2013/14, the total budgetary outlay for health in Haryana was Rs. 2,804 crores and spending to procure medicines is Rs. 69 crores. Spending on medicines increased from 1.9 percent to 3 percent over the years. OOP expenditure and impoverishment rates have been low in the states where state governments have invested consistently higher proportion of funds into health and in particular in medicines.
- In 2011/12, as many as 34.3 million people, 3.1 percent of the population, fell below the poverty line because of expenditure on medicines.
- A Stock Status Survey in Quarter 2 of 2014 indicated that stock-out rates vary greatly (from 8.0 percent to 53.3 percent) even among products within a single supply chain. (This applies to all four supply chains assessed: Essential Medicines, Family Planning, Vaccines, and HIV).[34] This implies varying management processes within a supply chain.
- According to the survey, stock-outs appear to be linked to poor inventory management and record keeping and insufficient knowledge of essential list requirements.
- Records were not kept up-to-date nor were they fully accurate: more than half of the surveyed facilities did not update stock cards. Where stock cards were available and up-to-date, products are more often available.

[34] A Stock Status Survey was conducted at 386 health facilities in 10 districts in Haryana to assess overall supply chain functionality, product availability, and stock status of Reproductive Maternal Neonatal Child Health +Adolescents (RMNCH+A) commodities at service delivery points by the USAID DELIVER Project.

- While significant data are being captured through the Online Drug Inventory and Supply Chain Management System, users appeared to not have access to the right data and reports, reports did not always meet user requirements, and user screens contained too much information and were not always user friendly.
- One-third of facilities in Haryana have unacceptable storage conditions for one or more product groups. Poor storage conditions may be contributing to the high level of expiries, damage, and stock-outs.
- A PHFI study found that irrational prescribing practices were common across Haryana. This not only exposes patients to health hazards but also is a major source of cost escalation and waste of resources.
- A comprehensive State Medicines Policy and implementation plan was last updated in 2012. The policy addresses all aspects like finance, procurement, and dispensing of drugs and access to medicines.

3.3 *What do we want to achieve?*

- Free access to medicine at all the public health facilities by increased allocation of budget to the drug procurement.
- Robust procurement system and efficient supply chain mechanism by strengthening the Haryana Medical Services Corporation Limited
- Ensure adequate availability of quality drugs and consumables at health facilities with better forecasting and other procurement procedures.

3.4 *What do we need to do?*

3.4.1 Establish state-level committees for procurement decision making

In states that have a centralized procurement and decentralized distribution system, decision making happens at the level of the procurement agency, by various committees established under the HMSCL. The role of the State level committee is to estimate demand for medicines, develop the list of medicines to be procured, and open and finalize tenders. In most states, the committees contain representatives of various stakeholders including the finance department; various departments of medical colleges including medicine, pharmacology, and surgery; departments of health-medical colleges, public health and taluk level officials; and at times consumer groups. The HMSCL is yet to have a full-time Executive Director to overlook and manage the operation.

In order to improve access to and availability of commodities, it is important to improve the efficiency of forecasting and procurement. A standardized forecasting methodology and platform should be developed for multi-annual quantification of all RMNCH+A commodities in Haryana.

3.4.2 Adopt Standard Operating Procedures

Standard Operating Procedures (SOPs) and forms needs to be adopted across the supply chains to collect the minimal necessary data and should be implemented nationwide. This will result in better stock management and availability of commodity data for decision making at state and national levels.

3.4.3 Increase public expenditure on medicine

As recommended by the HLEG on UHC, an additional four-fold increase in medicine purchases by the public health system is required which is 0.4 percent of GDP over and above the current government expenditure at the central level. There is a similar urgent need to increase expenditure on medicine at the state level. This would ensure an adequate supply of essential medicines that are free to everyone and would provide much-needed financial risk protection to households.

3.4.4 Implement Standard Treatment Guidelines

Standard Treatment Guidelines (STGs) should be implemented across all the states and should include medicines only from the essential drug list. In addition, training of health professionals in Rational Drug Use should be instituted across both public and private health facilities. Prescription audits may also be conducted for monitoring the impact of STG implementation and other interventions.

Box 1: John Snow-managed USAID DELIVER Project

Enhancing technical capabilities of the HMSCL

The USAID | DELIVER Project provides technical assistance in supply chain management at the national level and in six states including Haryana, to help strengthen their RMNCH+A, Essential Medicines, and HIV/AIDS supply chain management systems.

In Haryana, DELIVER has conducted in-depth reviews such as a Landscape Assessment, Key Performance Indicator Review, Stock Status Survey, and Management Information System Review. In 2014/15, the project is focusing on the following aspects of the supply chain in the state:

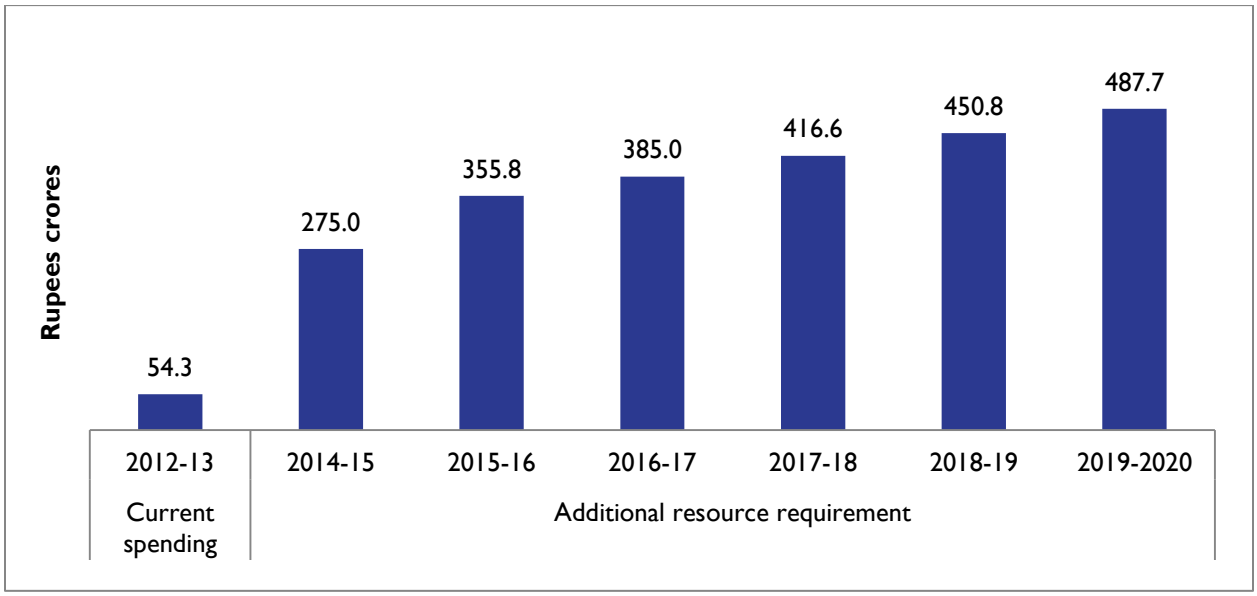
Encourage use of data for supply chain decision making.

- Build knowledge and skills of supply chain professionals at state, regional, and district levels to improve supply chain operations.
- Improve the procurement processes for essential medicines at the state and district levels.
- Enhance warehousing and inventory control approaches and tools for key stakeholders to support more efficient supply chain practices.
- Support an enabling environment for improved coordination between the various supply chains that provides RMNCH+A and HIV/AIDS commodities.

3.5 *How much will it cost?*

A properly implemented centralized procurement and decentralized distribution system in Haryana would lead to significant cost savings for state residents. Additional resources of Rs.275 crores would be required for 2015/16 to provide free medicines in all the facilities in the state. Figure 5 depicts the projected resource requirement for 2015/16–2019/20.

FIGURE 8: ADDITIONAL RESOURCE REQUIRED, 2015/16 TO 2019/20 (RS. CRORES)



The overall estimated cost of providing free access to medicine to prepare for UHC will be approximately Rs.2000 crore over the five years. Table 10 provides the estimated cost of addressing issues related to access to medicine.

TABLE 8: KEY STRATEGIES AND ESTIMATED COST (ACCESS TO MEDICINE) (RS. CRORES) 2015/16 TO 2019/20

Current situation	Standards or target to achieve	Key strategies to fill gap	Estimated Cost
Insufficient public expenditure on medicines	Increase public spending	Spend 10-15% of overall public health exp. on drugs	Rs. 2,000 crores
		Locate warehouses in every district or based on population norms	
		Procure essential and generic medicines (national- and state-level essential drug list)	
		Prescribe and dispense through STGs and ensure rational use	
		Computerize inventory management through web-based system	

4. HUMAN RESOURCES FOR HEALTH

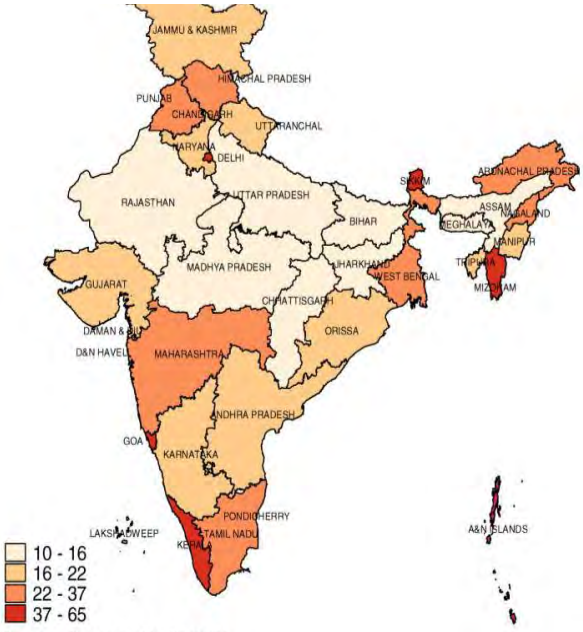
4.1 *Introduction*

Human resources for health (HRH) is one of the WHO's six building blocks[35] of a national health system. HRH are critical to a public health system's capacity to achieve national health goals; for example, the availability of health workers and their distribution has a direct impact on health outcomes such as IMR and MMR.[36] Shortage of health personnel negatively affects the quality and efficiency of public health service delivery – and of health outcomes.

4.2 *What is the situation now?*

- The 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.
- The WHO recommends 23 health workers per 10,000 population,[37] 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[38] (19 health workers for a population of 10,000[39]).
- Among states in India, Haryana ranks among the lowest in terms of health workforce density (see Figure 9). Vacancies for sanctioned positions are up to 30 percent for pharmacists and 14 percent for senior medical officers (see Annex D, table D-1). Additionally, more posts need to be sanctioned to account for population growth.

FIGURE 9 STATE-WIDE HEALTH WORKER DENSITY IN INDIA (PER 10,000 POPULATION: 2005



Source: Census of India 2001

35World Health Organization (2007). Everybody's Business: Strengthening Health Systems to Improve Health Outcomes. Geneva.
36Rao, Krishna D, Bhatnagar, Aarushi, Berman Peter (2012). So many, yet few: human resources for health in India. Human Resources for Health 10:19.
37World Health Organization (2006). The world health report 2006: working together for health.
38World Health Organization (2011). World Health Statistics 2011. Geneva.
39World Health Organization (2010). Global Atlas of the Health Workforce. Geneva.

4.3 What do we want to achieve?

- Twenty-three health workers per 100,000 population
- Rational deployment of skill sets
- Improved availability of skilled health workers in underserved populations
- Improved motivation and engagement of health workers, for improved quality and efficiency of care

4.4 What do we need to do?

4.4.1 Ensure adequate numbers of health workers

Haryana faces a chronic shortage of health workers in almost all cadres. The state needs to do efficient recruitment of these competencies on an urgent basis. Although MBBS and post-graduate doctor candidates are in short supply, the state can certainly ensure that the other paramedical cadres are recruited in the near term. The financial implications of filling all currently sanctioned positions are described below. These positions already have an allocated budget.

More important are the needed HRH that are not yet sanctioned. As the population grows, additional health infrastructure is required and these facilities must be staffed. The financial implications of staffing these health institutions are detailed further in the chapter depicted in section 4.

The issue of numeric inadequacy also needs to be addressed by creating new cadres and through a massive expansion of the medical education infrastructure. However, this is a long-term solution.

4.4.2 Establish a new cadre: Rural Medical Assistant

To address the HRH shortage, the Ministry of Health and Family Welfare has proposed a three-and-a-half-year Bachelor of Rural Medicine and Surgery degree to create a cadre of rural medical assistants (RMAs). These RMAs will exclusively serve the rural population at the primary care level. The degree curriculum will provide basic training in clinical examination, medicine, orthopedics, pediatrics, obstetrics and gynecology, general surgery, and public health.[40]

Haryana proposes to adopt this model. Based on lessons learned from Chhattisgarh and Assam, all five government medical colleges in the state will train RMAs with 20 students per medical college, for a total of 100 students per year. The students will receive three years of coursework in allopathic medicine followed by one year of internship. This internship will include three months of training at a subcenter, three months at a PHC, and six months at a CHC. Meanwhile, the state government will create a contract post of RMA in the state health service to absorb these students. These posts will initially be sanctioned at PHCs classified as remote or in High Priority Districts (HPD). RMAs in HPDs will be paid Rs. 25,000 per month; RMAs in non-HPDs will be paid Rs. 20,000 per month.

After 10 years of continuous service, an RMA may be allowed to complete the coursework of the MBBS in a state medical college and be awarded an MBBS degree. The state may subsidize the course, up to Rs. 50,000 per student per year.

[40] RajyaSabha Standing Committee. (2013). Sixty-fifth Report on the Proposal to Introduce the Bachelor of Science (Community Health) course. RajyaSabha, Parliament of India.

4.4.3 Do task shifting

Task shifting, the redistribution of tasks among the health workforce (usually from a higher cadre to a lower one), is an effective way to overcome health worker shortages.4142 The WHO recently recommended task shifting[43] to optimize health worker roles and to improve access to key maternal and newborn health interventions. The recommendations also stress the need to provide a conducive regulatory environment and quality assurance mechanisms to ensure intervention sustainability. Some of the mechanisms for this include:

- Comprehensive Emergency and Obstetrical Care (**CEmOC) training**: Train medical officers trained to provide anesthesia services and perform caesarian sections under defined circumstances, and,
- **Bridge courses for AYUSH doctors**: Allow AYUSH doctors to independently man PHCs, thereby expanding manpower at primary health care level. (See Annex D-1.)

Box 2 International Evidence – Task Shifting

Literature on the efficacy of using task shifting to address HRH shortages in developing countries comes from various countries. Much of the evidence relates expanding access to HIV treatment and care in sub-Saharan Africa.* provided sufficient training and oversight, non-physicians including community health workers are able to provide equivalent results. This economizes on physicians' time, in some cases up to 76 percent, and allows them to focus on the most difficult cases.**

Task shifting has also shown promise in the area of maternal and child health. In Mozambique, for example, assistant medical officers have provided good gynecological and obstetric care.*** Similarly in Ethiopia, non-physician clinicians were show able to deliver a large share of emergency obstetric procedures, with outcomes similar to those of physicians.****

However, international evidence also reveals that task shifting is not without drawbacks, particularly in that quality of care can suffer if appropriate supervision and training is not provided. Also, task shifting can face substantial resistance from existing institutions.

* Callaghan M, Ford N, Schneider H. (2010). "A systematic review of task- shifting for HIV treatment and care in Africa." Human Resources for Health, 8:8.
**Chung J, O'Brian M, Price J, Shumbusho F. (2008). "Quantification of physician-time saved in a task shifting pilot program in Rwanda." Proceedings of the XVII International AIDS Conference; 3–8; Mexico City, Mexico.
*** Fulton B et al. (2011). "Health workforce skill mix and task shifting in low income countries: a review of recent evidence." Human Resources for Health, 9:1.
**** Gessessew A et al. (2010). "Task shifting and sharing in Tigray, Ethiopia, to achieve comprehensive emergency obstetric care." International Journal of Gynecology and Obstetrics, 113.

[41] Rao, M., Rao, K.D., Kumar, A.K., Chatterjee, M., Sundararaman, T. (2011). Human resources for health in India. The Lancet, 377(9765): 587-598.
[42] Paliwal Amit, Luoma Marc, Avila Carlos (July 2014). Strengthening India's Public Health Workforce: A Landscape Analysis of Initiatives and Challenges. Bethesda, MD: Health Finance and Governance Project, Abt Associates Inc.
[43] World Health Organization. (2012). Recommendations: Optimizing health worker roles to improve access to key maternal and newborn health interventions through task shifting. Geneva.

4.4.4 Training of HRH

To improve efficiency and ensure widespread access, extensive use of new technologies, including mobile-based applications should be explored. HRH capacity-building needs should be assessed and systematically addressed. However, some priorities have been identified:

4.4.4.1 Cardiopulmonary resuscitation (CPR) and life support courses

Approximately 5-10 percent of newborns require some degree of active resuscitation at birth and approximately 1-10 percent born in the hospital are reported to require assisted ventilation.[44,45] Also, successful resuscitation after cardiac arrest requires early recognition of cardiac arrest, rapid activation of trained responders, timely initiation of basic life support, early defibrillation, and early advanced cardiac life support.[46] The life support, both basic and advanced, training of health care professionals should help in the above scenarios.[47] The following will be emphasized in the first phase:

a. Basic life support for health care providers
b. Neonatal resuscitation

4.4.4.2 Public health training for health functionaries

Medical doctors are often pushed into public health roles that require data analysis, planning, behavior change, and program management skills for which they are not prepared. Recognizing that the public health cadre has its own skill set, distinct from clinical service delivery, is important for improved health systems functioning. Thus, for all public health roles, the state should either give existing functionaries a three-month course in basic public health skills (epidemiology, biostatistics, planning, and management) through a three month course or encourage medical officers to opt for professional qualifications in public health.

4.4.5 Create a public health cadre

Currently in Haryana, clinicians manage public health programs. A dedicated cadre of health workers with specific preparation in public health or management should be established[4849].

Tamil Nadu has a Directorate of Public Health, staffed by trained public health managers. Staff is promoted to the directorate only after several years of experience in planning and oversight of public health programs and services in urban and rural areas. This model is easily replicable, and indeed has been adopted in Karnataka, Maharashtra, Andhra Pradesh, Odisha, and Gujarat. The HLEG on UHC, the Indian Public Health Association, and other expert panels[50] have recommended this model for the efficient management of the public health system and services.

[44] Palme-Kilander C , Acta Pediatr (1992). Methods of resuscitation in low-Apgar-score newborn infants: A national survey.; 81: 739- 74
[45] Saugstad OD, Eur J Pediatr(1998) Practical aspects of resuscitating newborn infants; 157(Suppl 1): S11-S15.
[46] Doig CJ, Boiteau PJ, Sandham JD (2000). A 2-year prospective cohort study of cardiac resuscitation in a major Canadian hospital. Clin Invest Med.;23:132–43. [PubMed].
[47] http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3271556/
[48] Rao, M., Rao, K. D., Kumar, A. K., Chatterjee, M., & Sundararaman, T. (2011). Human resources for health in India. The Lancet, 377(9765), 587-598.
[49] Paliwal Amit, Marc Luoma, Avila Carlos. (2014). Strengthening India's Public Health Workforce: A Landscape Analysis of Initiatives and Challenges. Bethesda, MD: Health Finance & Governance Project, Abt Associates Inc.
[50]Haryana State Health Resource Centre (2013).Public Health Cadre Haryana.Panchkula.

Haryana would need a total of 132 public health positions up to the district level: 21 new positions of Additional Chief Medical Officer–Public Health (one per district) and 111 Block Public Health Officer Positions.

These positions would be created through a government notification, and existing medical officers would have the opportunity to opt for the positions. They would have to earn professional public health qualifications within three years or be sent back to the clinical cadre.

Alternatively, the state should consider merging existing CHC-in charge positions into block public health cadre positions, along with providing appropriate public health training. Except for the re-training costs, this option would not pose an additional financial burden.

4.4.6 Award location-based incentives

Adoption of location-based financial incentives should be considered to encourage all contractual and regular medical staff (specialists, doctors, staff nurses, pharmacists, and laboratory technicians) to work in facilities in remote areas. Incentives could be based on the facilities' degree of remoteness, such as "hard to reach" and "inaccessible." These location-based incentives could be combined with performance-based incentives to ensure that the providers are actually present at the remote facilities. The financial incentive would be paid on a monthly basis, preferably with the monthly salary/compensation. (See Annex D-2.)

4.4.7 Award performance-based incentives

A combination of financial and non-financial incentives is recommended to encourage improved health worker performance.[51]

- **Financial:** All employees, both regular and contractual, in all health facilities in Haryana would be eligible for performance-based incentives. The state could phase in these incentives starting in HPDs. Facilities would be evaluated yearly against key performance indicators and, based on the percentage improvement in service provision, would be paid a one-time annual bonus.
- **Non-financial incentives:** Non-financial performance-based incentives include:
    1. Recognition
    2. In-service training of choice
    3. Additional paid leave
    4. Supervisory role / Choice of task

The salary budget of the health workforce in HPDs is approximately Rs.25 crores. Haryana could budget an additional Rs.2 crores to cover financial and non-financial performance based incentives in the state. (See Annex D-3 for detailed cost estimates.)

[51] Rao M., Rao K., Kumar A. K., Chatterjee M., Sundararaman T. (2011). Human resources for health in India. The Lancet, 377(9765), 587-598.

Box 3: International evidence - Incentives

International experience provides evidence to countries considering adoption of incentives for good performance and for staffing rural and remote areas. Much of the evidence on performance-based incentives in health is from Africa. Rwanda was the early adopter and star performer. Its nationwide scheme pays additional fees to health facilities for delivered services, including child health services such as child growth monitoring, preventive care visits, vaccinations, and referrals of malnourished children. The scheme also pays for four completed ANC visits and for institutional deliveries. It also incentivizes quality of care, through a discounting of fees by quality assessment scores. *

The results from Rwanda indicate that child growth monitoring and institutional deliveries have increased. The quality of services – as measured by compliance with national and international standards – has risen considerably for curative, ANC, and family planning consultations; growth monitoring, and institutional deliveries. ** Rwanda's success has encouraged many of its neighbors, most notably Burundi, to explore similar programs. ***

There is also international evidence regarding location-based incentives. A recent report by the World Bank discusses methods to encourage staffing in rural and remote areas. **** One of its conclusions is that successful strategies include a bundle of interventions; each targeting specific factors underlying health workers' decisions on where to work. Such strategies have been employed in Chile, Indonesia, Thailand, and Zambia. In addition, the incentives must match with the workers' preferences and expectations. It proposes discrete choice experiments (DCE) to measure these preferences. One such DCE has already been conducted by Rao, in 2012 in Uttarakhand and Andhra Pradesh, India, which concluded that drivers of rural postings include an improved salary, facility infrastructure, and reserved higher education slots. *****

*Sjoblom M, Beith A, Eichler R (2012). "Peformance-Based Incentives for Child Health: Taking Stock of Current Programs and Future Potentials." Bethesda: Health Systems 20/20 Project,.

** Rusa L et al. (2009). "Performance-based financing for better quality Rwanda health centres: 3-year experience." Tropical Medicine and International Health, 14:7.

***Meesen B, Soucat A, Sekabaraga C. "Performance-based financing: just a donor fad or a catalyst toward comprehensive health-care reform?" WHO Bulletin, 89.

****Araujo E, Akiko Maeda. (2013). "How to recruit and retain health workers in rural and remote areas in developing countries." World Bank Guidance Note.

*****Rao K. (2012). "How to attract health workers to rural areas? Findings from a Discrete Choice Experiment in India." BMC Proceedings, 6(Suppl 5): O1.

4.5 How much will this cost?

The overall estimated cost of addressing HRH issues in preparation for UHC by 2019/20 is approximately Rs.247.37 crore. Table's 11-14 provides the breakup of the estimate according to the strategies proposed above.

TABLE 9: COST OF FILLING VACANT SANCTIONED POSITIONS

S.No.	Name of post	Gap	Cost in Rs. crores
1	Senior Medical Officers	51	3.34
2	Senior Dental Surgeons	3	0.20
3	Medical Officers	460	17.97
4	Dental Surgeons	57	2.23
5	Physiotherapists	16	0.63
6	Sister Tutors	3	0.12
7	Staff Nurses	465	18.16
8	Nursing Sisters	12	0.47
9	Chief Pharmacists	17	0.66
10	Pharmacists	147	5.74
11	Radiographers	55	2.15
12	Senior Laboratory Technicians	1	0.04
13	Lab. Technicians (G)	163	3.56
		Total	**55.26**

TABLE 10: INFRASTRUCTURE AND STAFFING REQUIREMENT TO MEET NEEDS OF CURRENT POPULATION

Facility	SC (Shortfall 1639)		PHC (Shortfall 210)		CHC (Shortfall 55)		Total	
Additional staff requirement as per population norms	No.	Budget (Rs. crores)	No.	Budget (Rs. crores)	No.	Budget (Rs. crores)	No.	Budget (Rs. crores)
ANM	1,639	27.54					1,639	27.54
Specialist medical officer					220	14.41	220	14.41
Medical officer			210	16.80	220	8.59	430	25.39
Staff nurse			210	8.20	385	15.04	595	23.24
Pharmacist			210	4.59	55	1.20	265	5.79
Lab technician			210	4.59	55	1.20	265	5.79
Radiographer					55	1.20	55	1.20
Estimated budget for HRH to meet the population norms of establishing the public health facility								103.4

Source: Rural Health Statistics 2012

TABLE 11: SPENDING OVER A FIVE-YEAR PERIOD FOR HUMAN RESOURCES FOR HEALTH (RS. CRORE)

	2015/16	2016/17	2017/18	2018/19	2019/20	Cost
Step one	Ensuring numeric adequacy	Ensuring numeric adequacy				145.30
Step two	New cadre: RMA	New cadre: RMA	New cadre: RMA	New cadre: RMA		14.5
Step three	Training	Training	Training	Training	Training	5.375
Step four	Task shifting					5.58
Step five		Creation of public health cadre				45.82
Step six	Location-based incentive					10
Step seven	Performance-based incentive					20
Total						**247.37**

TABLE 12: KEY STRATEGIES AND ESTIMATED COST (HUMAN RESOURCE FOR HEALTH) (RS. CRORES) 2015/16-2019/20

Current situation	Standards or target to achieve	Key strategies to fill gap	Estimated Cost
No or limited health services	Ensuring health services	Provide health care workforce as per current vacancy status	145.30
		Provide health care workforce as per current population norms	
		Budget for the incentives	
		Provide supportive supervision to help achieve performance standards	
Insufficient health care workers in rural areas, poor access to care	New cadre: Rural practitioners	Hold symposium, build consensus, and identify priority skill areas	14.5
		Design program in partnership with medical and nursing colleges	
		Roll out program	
	Task shifting: • Non-physician prescribing • CEmOC training	Hold symposium, build consensus	5.58
		Adjust regulatory environment	
		Design training program	
		Roll out training program	
	Training • Life support training • Public health care	Adjust regulatory environment	53.75
		Design training program	
		Roll out training program	

Current situation	Standards or target to achieve	Key strategies to fill gap	Estimated Cost
	Location-based incentives	Design and roll out in HPDs	10
Unmotivated, disengaged workforce	Performance-based incentives	Design and roll-out in HPDs	20
Health workers do not have right skills for job	Public health cadre		45.82

5. GOVERNANCE AND INSTITUTIONAL REFORM

5.1 0Introduction

Health governance includes the frameworks for regulation, decision, and policy making within the health system by entities such as the national and state legislature, professional councils, and the bureaucracy. Having all needed frameworks in place ensures the smooth system functioning that is essential for UHC. Inadequate governance is increasingly associated with poor health outcomes in developing countries.[52]

5.2 0 What is the situation now?

In Haryana, there is a need to strengthen the governance framework to enable UHC. Challenges include:

- No regulation of the private health sector: A large number of hospitals have been registered as trusts to gain access to public subsidies but they do not provide the free care that they are required to give to the poor as part of their "trust" status.
- No live registry of health care providers.
- A need to rationalize and clarify procurement systems.
- A large network of unregulated informal providers who contribute to maternal mortality through unsafe abortion and other risks to good health outcomes.
- Absence of a legislative framework guaranteeing people the right to health.
- The health department is taking strong action against female feticide, enacting the Pre-Natal Diagnostic Techniques (PNDT) Act of 1996. In 2014, the reward for information about doctors practicing sex-determination was increased from Rs. 20,000 to Rs. 50,000. However, more awareness about gender is needed.

5.3 0 What do we want to achieve?

- The private sector providing care of an appropriate quality and cost, through qualified health care workers, and adhering to treatment protocols such as Directly Observed Treatment, Short Course (DOTS) adherence
- The government with a live register of professionally active nurses and doctors in both the public and private sectors, and where they are working (geographic area and type of facility)
- People with access to free drugs at public health facilities and to low-cost diagnostics and medicines of a minimum standard quality in both private and public sectors
- Strengthened community participation in review and social auditing of health programs at all levels including Rogi Kalyani Samitis (RKS) and village health committees

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[52] Sudarshan H., Prashanth N. S. (2011). Good governance in health care: the Karnataka experience. The Lancet, 377(9768): 790-792.

- Once coverage is assured, all citizens of Haryana have a clearly defined, legislatively guaranteed right to health services, diagnostic tests, and drugs

5.4 *What do we need to do?*

5.4.1 Regulate the private sector

In an unregulated environment, neither the private nor public sector ensures quality of or access to health care.[53] A strong regulatory framework should be developed to define and monitor the standards of health care (including quality, cost, and ethics), in both the public and private sectors. As far back as 1993, the World Development Report highlighted the need to strengthen the capacity of governments to regulate the private sector to ensure that quality of care is met, that fraud and abuse do not occur, and that those entitled to care have access to services.[54] The Clinical Establishment Act came into force in 2010 at the national level, and was enacted in Haryana in 2014. In states where it has already been rolled out (for example, in Karnataka), private providers have initially been resistant, and it took some time and effort to bring providers on board.

In a context where health care seeking favors traditional and non-formal providers, both the public and private formal health sectors need to build trust between them and the community by ensuring the quality of care they provide. The government needs to position regulation of quality as a trust-building exercise, along the lines of the ISO900 quality assurance branding – a means to guarantee good quality health care to all citizens. Greater regulation of formal private sector providers will improve case-based surveillance through the Integrated Disease Surveillance Program (IDSP) and the Revised National TB Control Program (RNTCP).

There is also a need to regulate the many non-formal providers. They need to be identified and closely monitored for activity around sex determination or feticide. They must also be prevented from treating sick pregnant women or children. Once there is universal access to formal health providers, they should be closed down.

A regulatory authority needs to be established to coordinate quality of care in both public and private health sectors. This must include facility-based monitoring and a mechanism to address complaints.

5.4.2 Improve registration of health care workers

The 11th 5-year plan from the Planning Commission outlined the need to improve professional registration by the medical and nursing councils to ensure their registries are "live," that is, reflective of the actual working population of professionals. To this end, both councils have initiated registration renewal with a continuing education requirement. The registry includes details about workers' current location and skills, which help planners, understand provider-population ratios and plan for health workforce needs. At the state level, roll-out of this has been uneven and may need to be fostered.

Once there is a government Human Resources Information System (HRIS), these systems can be interoperable.

With funding from the Centers for Disease Control and Prevention (CDC), FHI 360's Strengthening Nursing Expertise in HIV/AIDs (SNEH) Project supported the nursing councils in Andhra Pradesh and Gujarat in development of a computer-based online registration system, which helped accommodate

[53] Reddy K. S., Patel V., Jha P., Paul V. K., Kumar A. K., Dandona, L. (2011). Toward achievement of universal health care in India by 2020: a call to action. The Lancet, 377(9767), 760-768.
[54] World Bank (1993) The World Development Report. Washington, DC.

registration renewal. The councils have made this software and associated training available for free to all state nursing councils. This is something that could also be achieved through HFG Project efforts to build an HRIS in Haryana. The open-source program that they use, i-HRIS, also has a professional registration module.

5.4.3 Develop legislative framework for transfer and posting of medical officers

In transferring and posting health personnel, Haryana will consider the example of Karnataka, which passed an act that regulates transfer of medical officers and other staff of the department of Health and Family Welfare to ensure the availability of medical officers and other staff in rural public facilities. This is especially important for medical officers trained in CEmOC, Life Saving Anesthesia Skills, and radiology. The regulation dictates that all rural posts must be filled first. All medical officers other than the most senior are given a mandatory rural posting during their tenure.[55] Additional appointments cannot be made to surplus districts such as Rohtak, Sonipat, and Jhajjar. Doing need-based distribution of health workers across the state ensures that rural residents access to care.

5.4.4 Adopt interventions for gender mainstreaming

Any effort toward UHC must be aligned with the broader goals of improving the status of women and girls.[56] Lower sex ratio in Haryana highlights the urgency of creating an environment that is more inclusive and accommodating of women. This is an area where the health department can provide leadership in gender inclusion, rather than just taking a punitive approach to those performing sex determination ultrasounds.

The health department should appoint a state-level nodal officer to ensure gender equity is mainstreamed into all activities.[57] The State Institute of Health and Family Welfare and the Haryana State Health Resource Center should develop a gender mainstreaming training curricula. A research agenda should also be established to consider issues such as the concerns of female health workers, and identify gendered barriers to care seeking for hard-to-reach populations (for example, women in underserved districts). Gender should be central to efforts around intersectoral coordination and BCC messaging.

5.4.5 Improve intersectoral coordination

Intersectoral coordination is one of the key goals of the NHM:

> Attainment of Universal Access to equitable affordable and quality health care services, accountable and responsive to people's needs, with effective inter-sectoral convergent action to address the wider determinants of health.[58]

Health status is determined by many socio-economic factors that are external to the health system, such as educational status, poverty, food security, and water and sanitation. For this reason, intersectoral coordination is required to address the many determinants of health, and take advantage of multiple platforms (the school classroom, the Panchayat Raj meeting) to promote health. Many different program

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[55] The Karnataka State Civil Services Act (regulation of transfer of medical officers and other staff) 2011. Accessed online on the 4th October at: http://dpal.kar.nic.in/pdf_files/2of2011(E).pdf

[56] Raj, A. (2011). Gender equity and universal health coverage in India. *The Lancet*, *377*(9766), 618-619.

[57] This recommendation was adapted from the High Level Taskforce Report on Health Indicators; Haryana State Health Resource Centre (2013) *High Level Taskforce Report on Health Indicators, Haryana 2013*. Panchkula.

[58] Ministry of Health and Family Welfare, Government of India. (2012) Framework for Implementation of the National Health Mission, 2012-7. New Delhi.

areas, especially NCDs and nutrition, require an intersectoral approach for effective promotion and prevention.

This report proposes a number of different intersectoral coordination platforms:

- A Steering Committee for the implementation of UHC
- Coordination bodies for nutrition at state and district levels in the **"Zero Undernutrition**" for Haryana.
- District-level coordination body for NCDs, which has been proposed in one district, with an accompanying effort to document lessons learned and then scale up.
- Inclusion of the BCC unit, as messages should be delivered to beneficiaries in an integrated and synergistic manner (see BCC chapter).

All coordination platforms would include the gender nodal officer described above.

5.5 *How much will this cost?*

There are no financial implications for strengthening the governance structure of the state. Table 14 summarizes the key governance strategies that have been discussed for UHC.

TABLE 13: KEY STRATEGIES AND ESTIMATED COST (GOVERNANCE AND INSTITUTIONAL REFORMS) 2015/16-2019/20

Current situation	Standards or target to achieve	Key strategies to fill gap	Estimated Cost
No clear right to health	National health bill	Draft bill	No cost
Private sector unregulated – uneven quality, uneven costs	Private sector regulation	Draft bill	No cost
		Register all providers	
		Do ongoing monitoring according to prepared audit tools	
No idea how many nurses or doctors or where they are working	Live registry in medical and nursing councils	Adapt registry tools from other states	No cost: Free software and roll-out through National Informatics Centre with the SNEH Project
		Implement re-registration requirement	
Mismatch between skills/ training and job roles	Public health training required of all public health functionaries	Work with public health schools to help design appropriate pre-service training	No cost
Program design and planning too often occurs at the national and state level		Develop a public health cadre	Cost estimated in HRH section
		Ensure capacity at district and block level for planning and implementation	No cost

6. HEALTH INFORMATION SYSTEMS

6.1 *Introduction*

Data and its translation into information is a critical component of tracking service coverage – key to ensuring services cover everyone. An effective health information system (HIS) that aggregates routine health statistics across health facilities in Haryana would support both the provision and tracking of services delivered, and the monitoring of progress toward key UHC objectives. The study team envisages an ambitious and robust HMIS for UHC that will capture virtually every health system event, structure, and function. This section reviews key HIS issues that need to be addressed in order to promote UHC in Haryana.

6.2 *What is the situation now?*

Haryana has made major efforts to enumerate services provided, particularly in the areas of family planning, and maternal, child, and neonatal health. Development of HIS in Haryana has been disjointed, with each health program collecting its own data.

- Multiple registers capture duplicative data in **lengthy formats.** This is time consuming for front-line workers, and much of the data are not used for decision making.
- Similarly, vertical programs have their own HIS (See Annex E, Table E-1), which is duplicative and prevents interoperability.
- There has been no systematic approach to defining data needs, or developing uniform tools to collect streamlined data.
- The District Health Information System (DHIS 2.0) and the national HMIS Portal are the two main electronic reporting tools for NHM in Haryana. DHIS 2.0 provides monthly summaries of facility-level indicators across priority health programs, and feeds into the National HMIS Portal.
- There are no incentives for producing high-quality data and using that information for decision making for clinical care, program management, and resource allocation or planning.
- The data are not made available to the public for the purposes of transparency and accountability.
- There is no single, centralized facility list, unique provider number for clinicians, or unique patient identifier system, which prevents effective and comprehensive tracking of patients and health outcomes.
- Much of the care provided in private health care facilities or doctors' offices are not captured in the public HIS, leaving significant gaps in the health data.
- Household surveys (DLHS, NFHS) are used more than the routine HIS to provide data for decision making.
- The private sector does not report details about infectious diseases or mortalities.
- Efforts are underway to routinely analyze the quality of health data and to train district health teams on the analysis and use of data to improve health outcomes locally, with support from USAID under the HFG project.

6.3 What do we want to achieve?

- Rationalized reporting of health data across program areas to support the health objectives of the state
- Improved quality of data captured through HMIS with alignment between routine and episodic data collection
- All patients, clinical providers, and health facilities uniquely identified across multiple HIS in Haryana, allowing tracking of service utilization, adherence to clinical guidelines, and patient health outcomes
- Electronic information available to program planners and used for program planning, for tracking payments electronically for health care services across systems. and for monitoring progress toward achieving UHC objectives
- Reduced service delivery costs brought about by efficiency gains in data capture and reporting, as well improved program management and planning

6.4 What do we need to do?

6.4.1 Develop standardized protocols to eliminate duplication in reporting

Rationalization of the data registers used at the subcenter and PHC level, mapping of the flow of information to identify redundancies, and streamlining of the reporting process will reduce the data capture burden. Additionally, electronic capture will create efficiencies in capture, aggregation, reporting, and analysis. The use of electronic information systems requires the adoption of standards to ensure that data elements are captured in the same format across multiple systems, facilitating electronic sharing of information across systems.

6.4.2 Establish a centrally managed and empowered body

A centralized body at the state level body will be established for development of an HIS strategic vision and implementation plan to support NHM in Haryana. The process for rationalization of data registers will start by convening key stakeholders to review existing reporting tools and map data flows.

6.4.3 Establish a centralized data warehouse

A central data warehouse will be established by building, managing, maintaining, and operating a central warehouse for data compilation, storage, retrieval, analysis, and interpretation. A repository is needed for all these activities, resulting in effective and efficient data management. Standardized protocols will also allow for the interoperability of different HIS, and the tracking of patients through them.

6.4.4 Embed clinical job aids and protocols into the HIS interface

Embedding clinical quality guidelines and protocols into these electronic systems will also result in more effective patient monitoring and treatment.

6.4.5 Use handheld devices for data capture at the community level

Much of the community-level (as opposed to facility-level) information is captured only in writing, in hard-copy books or registers. Development of a handheld computer-based data capture and reporting

application for ANMs, for example, would streamline the capture of information by allowing electronic recording and validation of information at the point of care. It would also allow for clinical protocols to be built into to the provision of care, thereby improving quality and reducing missed health risks. Reports can be generated to help the ANM plan outreach activities in coordination with the ASHAs. A similar application has already been piloted by PHFI in Punjab.

6.4.6 Use unique patient identifier for improved tracking

Another form of standards-based development is the use of unique identifiers. In order to track patients uniformly across information systems and programs, the following need to be developed:

- A unique patient identifier: This could be borrowed from an existing program such as Unique Identification Authority of India or National Population Register.
- Standardized clinical provider identifiers.
- Unique health facility identifiers.

Unique identifiers allow for clinical tracking of patient access to services, documentation of adherence to clinical guidelines, and ultimately patient health outcomes and changes in targeted population health over time.

6.4.7 Improve interoperability for increased utility

A patient-based reporting system should form the basis of a broader HIS that can generate reports outlining the services delivered by patient, by facility, and by other geographic aggregations. With a standards-based approach, this information can be linked across electronic systems by patient, provider, or facility. This will increase the ability of program staff to identify duplication of services and identify data quality issues in a systematic way. Interoperability will ensure information can be shared across various other sectors and departments regarding demographics, disease burdens, and financial and economic impacts.

6.4.8 Develop dashboards for improved program monitoring

In order to promote more effective data usage, information needs to be provided to program managers, planners, and other data users in ways that are meaningful, timely, and efficient. Developing electronic dashboards that are customized to the needs of the user at the district, block, and PHC level can support this. The content of the dashboards at each level should be based on the specific decisions that need to be made at each of these levels.

6.4.9 Do participatory data review

CARE, through the Ananya project in Bihar, has established monthly review meetings at the PHC and block levels where Mother and Child Tracking System (MCTS) and HMIS data are reviewed in a participatory and non-punitive way, focused on problem solving, planning, and celebrating successes. This decentralized problem solving empowers providers to be better managers of public health programs and facility management. Haryana would adopt this strategy for participatory data review.

6.5 *How much will this cost?*

The overall estimated cost of strengthening the Haryana HIS for capturing and improving health care data for UHC is approximately Rs.95 crores over the next five years. Table 16 breaks down the estimated cost by strategy.

TABLE 14: KEY STRATEGIES AND ESTIMATED COST (HEALTH INFORMATION SYSTEMS) (RS. CRORES) 2015/16-2019/20

Current situation	Standards or target to achieve	Key strategies to fill gap	Estimated Cost
Lengthy formats with high load on data capturing unit	Rationalized reporting of data through minimum number of registers, formats, and information systems Data reported by the service provider	Convene key stakeholders to review existing reporting tools and map data flows	~ .02
		Agree on rationalized tools and reporting processes based on needs for tracking UHC indicators	0.20
		Develop electronic tools for patient-level data capture using standards-based approach	
		Procure handheld devices	
		Roll out electronic data capture tools to health workers and train on usage of tools	20.00
		Institutionalize training and updating of tools	1
		Operational expenditure	2
		Cost of connectivity and other communication cost	4 /year
Non-standard data systems that do not share information electronically	Uniform standards adopted and used across all electronic information systems	Convene standards-setting body to oversee development and adoption of electronic health data standards for Haryana	2
		Engage with national Meta Data & Data Standards committee to build on their work to date with standards development and adoption	
		Develop timeline for adoption and implementation of data standards	
		Review development plans of key stakeholders and ensure conformance with adopted standards	Capex-5 Opex 1 /year
		Estimate cost to maintain a public website with standards, guidelines, and reference materials and to implement geographical information system (GIS) and business intelligence	1 2
Facility-based reporting of routine health data of sub-optimal quality	Patient record-level reporting allows for tracking of patients, providers and services, in addition to uniform reporting by facility.	Develop unique identifier system for patients, providers, and health facilities through transparent review process	0.50
		Share unique identifiers with key stakeholders to ensure buy-in and adoption	
		Publish and disseminate unique identifier guidelines, protocols, and updating processes	

Current situation	Standards or target to achieve	Key strategies to fill gap	Estimated Cost
		Define functional requirements for patient-based electronic reporting system (e.g., electronic medical records (EMR) system)	
		Initiate review of potential EMRs (i.e., build versus buy/adopt)	
		Solicit proposals to build/adopt/implement EMR	
Low levels of data usage for program planning and decision making	Routine data systems generating data for dashboards that allow for customized reviews of key disease patterns, health cost drivers and financial flows, adherence to clinical quality of care guidelines, and impact on health outcomes over time	Identify data needs of key dashboard user groups and information sources	1.50 per dashboard developed .03 per year to maintain and update each dashboard 1 for ongoing training and capacity building on data usage
		Define functional requirements, system architecture and data verification processes	
		Design system architecture and functionality based on real data	
		Develop and test system to confirm functionality	
		Deploy systems and train users on use, maintenance, and upgrading	

7. QUALITY IMPROVEMENT, INFRASTRUCTURE, AND HOSPITAL MANAGEMENT

7.1 *Introduction*

Quality of care is fundamental to ensure UHC translates into improved access to and utilization of care, and to improved health outcomes. Large investments in health do not automatically translate into improved quality of care[59] – and for this reason, quality needs to be approached systematically and purposively. Infrastructure and management systems must be in place to ensure availability of services, to improve patient and employee satisfaction, and to ensure a safe and secure hospital environment. This will improve clinical outcomes, access, patient communication, and medical record keeping and reduce inpatient waiting times.

7.2 *What is the situation now?*

7.2.1 Infrastructure

- The average population covered by a subcenter and PHC in Haryana is 6,560 and 36,983, respectively, higher than the guidelines of 5,000 and 30,000.[60]
- Overall, the state has a 39 percent shortfall of subcenters, 32 percent of PHCs, and 34 percent of CHCs (Tables 17 and 18).[61] The availability of infrastructure compares well to other states such as Maharashtra and Punjab that have better health indicators. (See Annex F, Table F-1.)

TABLE 15: FACILITY STRENGTH IN HARYANA STATE, 2013

Facility type	Numbers*	Percentage	Facility shortfall
Health subcenters with one ANM	149	4.4	39%
Health subcenters with two ANMs	2481	73.1	
24 x 7 functional PHCs	278	8.2	
Total PHCs	345		32%
Total CHCs	110		34%
Total CHCs working as First Referral Unit (FRU)	33	30	
Hospitals	56		

Data Source: NHM Management Information System (MIS) report September 2013

[59] WHO 2006. Quality of Care: A Process for Making Strategic Choices in Health Systems. Geneva.
[60] Statistics Division, Ministry of Health and Family Welfare, Government of India. 2012 Rural Health Statistics in India 2012. New Delhi.
[61] Statistics Division, Ministry of Health and Family Welfare, Government of India. 2012 Rural Health Statistics in India 2012. New Delhi.

TABLE 16: SHORTFALL OF HEALTH FACILITIES INFRASTRUCTURE IN HARYANA

	Existing number	Target in 2011 census	Shortfall
CHC	112	139	27
PHC	485	550	65
Subcenter	2,630	3,305	675

Data Source: Department of Health, Government of Haryana update note, Oct 2014

7.2.2 Quality of services

The gap analysis done by the Haryana State Health Resource Center in the states five district hospitals found the following gaps:

- Health worker shortages that impede the achievement of quality of care (see Chapter 4, Human Resources for Health)
- Long patient waiting times
- Inaccessible or unsafe hospitals
- Inconsistent record-keeping practices (see Chapter 6, Health Information Systems)
- Poor inventory management (see Chapter 3, Access to Medicines)
- Limited infection control

7.2.3 A new Hospital Management Division approved

- A new administrative structure, the Hospital Management Division, has been approved. In the division, the Principal Medical Officer is to be assisted by two Deputy Medical Superintendents (DMS-1 and DMS-2). The DMS-1, an MBBS with a Masters in Health Administration, will look after clinical services, whereas the DMS-2, an MBBS/BDS/BAMS with a Masters in Health Administration, will look after non-clinical services.
- In hospitals with 200 beds there will also be a Quality Manager to look after all quality improvement activities and be responsible for coordination and implementation of various quality improvements.
- In 100-bed hospitals, the DMSs can take care of the quality-related work.

7.3 What do we want to achieve?

- Adequate and rationalized health care infrastructure according to population norms to ensure access to essential services.
- A safe and secure environment for patients coming to government hospitals by preventing medication errors, patient falls, needle stick injuries, wrong surgeries, infections, and so forth.
- Improved infection control practices (segregation and disposal of waste, hand washing).
- Staff trained in disaster management, fire safety, CPR, and so forth.
- Easily accessible health facilities with prominently displayed signage for guiding patients and attendants. Safe and disabled-friendly hospital buildings compliant with fire safety norms and with ramps, handicapped friendly toilets, handrails, and so forth.

- Well-maintained medical records with ensured confidentiality of patient information and easy retrieval.
- Improved utilization of health care resources and improved productivity of health care workers.
- Improved inventory control practices by means of computerization.
- Reduced patient waiting time.

7.4 What do we need to do?

7.4.1 Plan for new hospitals and upgrade existing health facilities

All new hospitals need to be properly planned, and a **dedicated hospital planning** wing at state level needs to be set up. Hospital design should respond to functional requirements, with a clear segregation of workflow. The emergency area must contain an uninterrupted flow with separate triage and resuscitation areas. The operating theater, x-ray, and ultrasound areas need to be separate from each other. There should be an adequate circulation area, waiting area, ramps, corridors, and so forth. Patient and staff safety should be a design concern. Existing health facilities should be upgraded to adhere to defined quality parameters. (See Annex F-1 and Table F-3 for detailed cost estimates.)

7.4.2 Establish a quality team

Implementation of quality management system in facilities is time consuming because it involves a change in the overall environment and culture of the facilities. Therefore, the strategy should be to implement quality improvement in hospitals in a phased manner. The first step is to develop a **quality team**. The team will be responsible for conducting a baseline **gap assessment** of the facility and prepare an action plan for filling those gaps, with clear steps, timeline, and responsibilities. The assessment would address training, documentation, bilingual signage, and equipment.

7.4.3 Implement the new Hospital Management Division

The new approved Hospital Management Division, described in Section 7.2.3 above, needs to be implemented.

7.4.4 Hire additional HRH

HRH play an essential role for effective planning of quality improvement activities. The various categories of staff are essential for improving management, operations, and quality. (See Annex F, Table F-2.)

7.5 How much will this cost?

The overall estimated cost of strengthening quality improvement and building health infrastructure for UHC in Haryana is approximately Rs.1, 258 crores over the next five years (Table 19).

TABLE 17: KEY STRATEGIES AND ESTIMATED COST (QUALITY IMPROVEMENT, INFRASTRUCTURE, HOSPITAL MANAGEMENT) (RS. CRORE) 2015/16-2019/20

Current situation	Standards or target to achieve	Key strategies to fill gap	Estimated Cost
Shortfall in the existing CHCs, PHCs, and subcenters	Adequate health care infrastructure	Plan and establish new health care facilities	1106.48
Quality improvement not assigned to any particular position or unit	Establish quality teams	Compile teams, deploy	15,1.62
Hospitals not designed according to quality standards	Ensure compliance with a quality code in planning new and upgrading existing hospitals	Develop code Enforce code	
Staff shortages	Increase numbers of staff	Increase number of sanctioned staff and hire	

8. HEALTH AND HEALTH SYSTEMS RESEARCH

8.1 *Introduction*

Well-planned health research is fundamental to improved health status.[62] UHC will require robust data to inform daily management and strategic planning. While Haryana can draw on extensive bodies of national and international evidence, local health problems ultimately require locally proven solutions. For this reason, state-level research capacity should be nurtured.

8.2 *What is the situation now?*

- Medical colleges in Haryana have limited research capacity in public health, and are specifically lacking skills in epidemiology and biostatistics.
- There is good national-level research infrastructure with the National Health System Resource Center, the PHFI, the Indian Council of Medical Research, and the new Department of Health Research, but little at the state level.
- A lack of up-to-date data around social determinants of health means there is little basis for intersectoral coordination. Haryana has established an annual household survey, the Concurrent Evaluation Survey with a sample size of 80,000 households. The survey does not collect information around social determinants of health (access to toilets, piped water, and education level).
- Achieving UHC will require up-to-date information about the disease burden, equity, coverage, and cost effectiveness of different services.
- Strong partnerships between the government and agencies such as PGIMER Chandigarh, Post-Graduate Institute of Medical Science (PGIMS) Rohtak, the Indian Institute of Public Health (IIPH) Gandhinagar, and Statistical Analysis System (SAS) India have been established. WHO Geneva is providing both technical and financial support to do six implementation research projects. USAID is supporting the state in furthering the objective of creating new evidence through implementation research projects.

8.3 *What do we want to achieve?*

- Clearly defined, agreed upon state-level research priorities
- A School of Public Health and "center of excellence" in Haryana, at PGIMS Rohtak has been proposed and is currently under consideration
- Biostatisticians and epidemiologists appointed to all medical colleges in Haryana to expand the capabilities of their Community Medicine departments
- Data on social determinants of health (availability of improved water source, access to a toilet, food security) to guide intersectoral coordination (the ongoing availability of the Concurrent Evaluation data)

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[62] Dandona, L., Katoch, V. M., & Dandona, R. (2011). Research to achieve health care for all in India. *The Lancet*, *377*(9771), 1055-1057.

- Stronger monitoring and evaluation of state health systems strengthening efforts, leading to locally proven solutions, specific to the state context
- Increased use of research results in policy making
- More biomedical research

Box 4: A partnership of implementation research

Implementation research examines the process of program implementation and service delivery. A May 2014 workshop attended by the WHO, the HFG project, state-level managers, and academics explored different areas for implementation research within the NHM in Haryana. A subsequent workshop in September developed different research ideas into proposals. Currently 10 proposals have been finalized and sent to the WHO for approval and fund release. The different partners include International Clinical Epidemiology Network (INCLEN) New Delhi, IIPH, Survival for Women and Children Foundation (SWACH) Foundation, PGIMER Chandigarh, and the Society for Applied Studies, New Delhi. Proposed research topics for Haryana include:

- Implementation research for strengthening supportive supervision in public health facilities
- Improved quality of care for mothers and newborns at district hospitals and FRUs of three districts
- Operationalization of the policy of using community health workers to treat uncomplicated pneumonia and diarrhea in children aged 2-59 months
- Development of a rational performance-based payment system to improve the coverage and quality of reproductive and child health services delivered by ASHAs
- Improving the management of high-risk pregnant women in one district

8.4 What do we need to do?

The health system can take steps to nurture a research ecosystem within the state, as outlined in the 2013 World Health Report Research for Universal Health Coverage.63 These steps are described below.

8.4.1 Set research priorities

The health system needs to set health research priorities, so the evidence generated informs the decisions that need to be made and limited funds for research are allocated appropriately. One priority might be the major causes of ill health in Haryana, another ensuring equity in coverage, with a systems-focus.[64] Priorities may need to be directed toward public health challenges rather than biomedical research.

A participatory workshop should be convened to prioritize research topics for a five-year period.

[63]WHO, 2013. World Health Report 2013: Research for Universal Health Coverage, Geneva.

[64]Balarajan, Y., Selvaraj, S., Subramanian, S. V. (2011). Health care and equity in India. *The Lancet*, *377*(9764), 505-515.

8.4.2 Strengthen research capacity

Research capacity can be strengthened by building individual capacity through fellowships and building institutional capacity by establishing research centers of excellence.

- Develop a Haryana Public Health Fellowship program to build capacity in public health research and leadership in partnership with PHFI, which already has an office in Gurgaon, Haryana. (See details in the Chapter 10, Nutrition.)
- Develop a public health research **"Centre of Excellence"** at a university, medical college, or research institution within the state (such as School of Public Health, PGIMER, Chandigarh). This could be done in partnership with the Haryana State Health Resource Center and the Public Health Foundation, India.

8.4.3 Define and implement norms and standards

The state in collaboration with other stakeholders would undertake initiative to provide training not only in research methods but also in the good conduct of research – on accountability, ethics, integrity, and the stewardship of information on behalf of others. Adopt codes of conduct to ensure that ethical standards are understood by all involved, and are actively maintained. For research projects to be approved, all investigators should complete basic ethics in research training.

8.4.4 Translate research to practice

The local think tank, research institutions and other knowledge partners will help decision makers understand research so they can use data and evidence for better decision making. Also help researchers understand what the information needs of decision makers are, so they can ensure their research results meet these needs. This can be facilitated by:

- Including policy decision makers on advisory boards for research projects
- Holding short online or in-person trainings on monitoring and evaluation oversight
- Consulting with policymakers on a regular basis to understand what information they need for improved decision making
- Ensuring that the best available evidence is incorporated into pre-service and in-service training, job aids and clinical guidelines and protocols, so health workers are kept up to date.

8.4.5 Establish a Chief Minister's Fellowship for Health and Nutrition

This fellowship will be modeled on the Gujarat Chief Minister's fellowship. Haryana fellows will be selected through a national campus recruitment and open call, to serve for one year at the district level, in all 21 districts, to support the administration in designing, piloting, and evaluating innovative solutions to combat under-nutrition and other public health problems. Graduates with Masters of Public Health, in Nutrition, in Bio-statistics, in Epidemiology, and in Business Administration in health care from state and central universities, PGIMER Chandigarh, IIHMR, IIPS, and so forth will be considered. This will promote leadership in the area of nutrition and public sector innovation, and build research capacity.

8.5 *How much will this cost?*

The overall estimated cost of improving and advancing the current health and health system research would be Rs. 18 crores over the next five years. Table 20 summarizes the estimated costs of the key strategies.

TABLE 18: KEY STRATEGIES AND ESTIMATED COST (HEALTH SYSTEM RESEARCH) (RS. CRORES) 2015/16-2019/20

Current situation	Standards or target to achieve	Key strategies to fill gap	Estimated Cost
No clearly defined research priorities	Well-defined research priorities	Conduct a participatory workshop with key stakeholders to set priorities	0.46
Lack of state-level public health research capacity	State-level center of public health excellence	Establish fellowship program	17.92
		Appoint professor of biostatistics	
		Establish center of excellence in health systems research	
	Defined norms and standards		No cost
	Research translated into practice		No cost

9. BEHAVIOR CHANGE COMMUNICATION

9.1 *Introduction*

Despite improvements in interpersonal and mass communications, India is not using them to create awareness of health and nutrition norms and behaviors.[65] Without demand for health care services, UHC is impossible to achieve. Increasing knowledge and awareness and improving health behaviors empowers people to look after their own health (through improved diet, sanitation, and exercise), leading to improved health outcomes. A BCC strategy was initiated in Haryana in 2008/09 to impart health education to residents of rural/remote areas in simple and easy to understand language. Previously, all BCC activities had been carried out within different vertical programs. However, there is now a cross-cutting BCC unit, providing the opportunity for an integrated approach.

9.2 *What is the situation now?*

- The state health system focuses on curative behavior.
- Coverage of health services and behaviors is insufficient to achieve UHC. For example, only 22 percent of women receive full ANC, and only 52 percent of children receive all vaccinations (DLHS 4).
- Low levels of literacy (66 percent for women, 2011 census), and the existence of many Haryanvi dialects, means limited access to health information. For example, only 25 percent of women have heard of reproductive tract and sexually transmitted infections (DLHS 4).
- Many traditional beliefs prohibit the adoption of healthy behaviors; for example, in Mewat district many believe it is wrong to practice family planning, as children are a "gift from God." These beliefs vary across districts.
- Vertical programming has traditionally prevented an integrated approach to BCC: A BCC unit has been established with the support of the IHBP, to provide cross-cutting support across programs. The BCC cell works with many partners, working closely with SWACH, Pathfinder International, National Neonatology Forum, Norway India Partnership Initiative and so forth.
- The IHBP (see Box 5) has already designed a BCC plan for 2014/15.

9.3 *What do we want to achieve?*

- Localize BCC design and implementation efforts
- Provide ANMs and ASHAs with all the tools they need to provide counseling around healthy behaviors
- Build trust between frontline health workers and beneficiaries, and increase the standing of the frontline health workers

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[65] Paul, V. K., Sachdev, H. S., Mavalankar, D., Ramachandran, P., Sankar, M. J., Bhandari, N., & Kirkwood, B. (2011). Reproductive health, and child health and nutrition in India: meeting the challenge. *The Lancet*, *377*(9762), 332-349.

- Improve awareness and knowledge about priority health topics, such as knowledge of danger signs in newborns, and pre-conception nutrition
- Increase adoption of healthy behaviors such as hand washing, nutrition intake, and contraceptive use.

Box 5: Improving Healthy Behaviours Program Haryana

The USAID-funded IHBP, led by FHI 360, is mandated to provide strategic communication support to the NHM in Haryana. The objective of the support is to strengthen institutional and human resource capacities of the NHM BCC division to design, deliver, and evaluate BCC programs. This includes encouraging healthy behaviors through strategic and evidence-based BCC programs. Achievements so far include supporting the development of:

The BCC cell

- A strategic communication plan and its implementation
- The monitoring and evaluation system for strategic communication
- Evidence-based campaigns and their implementation
- A BCC strategy for RMNCH + A for the state
- Media plans for the state
- Capacity building using a Social BCC Framework, module / toolkits

9.4 What do we need to do?

9.4.1 Prioritize and develop message content

Most BCC activities focus on RMNCH+A. For UHC, BCC is an important way to promote integration with other health areas. Topic areas around the Essential Package of Care need to be identified and prioritized, focusing on clear, easy to understand and adopt, messages that can be communicated through different media (mass-media, mid-media, interpersonal communication). This can be done by:

1. Identifying which services have the poorest coverage (e.g., postnatal care)
2. Identifying which health behaviors are the least known and practiced (as identified through household surveys such as DLHS)
3. Identifying where poor service coverage and poor health practices converge (for example, poor newborn health practices and poor health seeking)
4. Ranking these behaviors according to the effect (direct and indirect) they have on mortality and morbidity
5. Identifying the target populations for such messages (those that are underserved, most at risk).

9.4.2 Provide frontline workers with mobile-based communication job aids for improved interpersonal communication

Frontline workers (FLWs) have been given flipbooks, but they are difficult to carry and so are not often used. A new approach is needed to give FLWs the job aids they will use to communicate key BCC messages. Mobile phones are on such aid – they are the platform for delivering messages through a tool that the FLW typically carries with her anyway. In addition to establishing SMS groups to send out notifications to FLWs, BBC Media has developed a suite of tools using Interactive Voice Response (IVR) suitable for low-literacy environments:

- **Mobile Kunji** – a tool for ANMs and ASHAs, includes flash cards with a call-in number with IVR recorded messages on specific health topics
- **Mobile Kilkare** – subscriber-based service that delivers messages to women according to their stage of pregnancy.

9.4.3 Community-produced video and facilitated discussion

Haryana may employ audio-video technology to facilitate community engagement, as Digital Green has successfully done in the field of agriculture. Digital Green is a model of delivering information about best practices through locally developed videos, screened at Saksha Mahila Samuh (self-help group) meetings with discussion led by a community facilitator at the village level. In studies done in agricultural extension, the model was found to be seven times more effective at one-tenth the cost of traditional in-person agricultural extension work.[66] As Haryana already has self-help groups in place, and the BCC unit already has experience in using video, this would be an easy model to adopt to increase reach into rural areas. This could be implemented at the block level by the Block Extension Educator.

9.4.4 Whatsapp movies

Short animated movies will be made that can be circulated through Whatsapp, Facebook, and other phone-based and online social networks. There are a number of potential distribution channels for these movies:

- Distributed in media-dark areas through the Digital Green model above, screened with a hand-held projector.
- ASHAs and ANMs can screen the videos during their interpersonal counseling sessions on smart phones or tablets.
- The movies can be distributed through social media platforms such as Whatsapp, Facebook.

For the social media approach, the messages would need to be targeted to a young demographic who are already regular users of social media. Messages could include menstrual hygiene, prevention of female feticide, and family planning.

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[66] Gandhi, R., Veeraraghavan, R., Toyama, K., & Ramprasad, V. (2007, December). Digital green: Participatory video for agricultural extension. In *Information and Communication Technologies and Development, 2007. ICTD 2007. International Conference on* (pp. 1-10). IEEE.

TABLE 20: KEY STRATEGIES AND ESTIMATED COST (BCC) (RS. CRORES) 2015/16-2019/20

Current situation	Standards or target to achieve	Key strategies to fill gap	Estimated Cost
FLWs don't have easy-to-use tools to help them spread counseling messages	Adoption of Mobile Kunji intervention	Produce content in local dialects	0.002
		Print Mobile Kunji cards (Rs 300 per deck)	0.90
		Adapt training materials	.02
		Train master trainers	0.21
		Roll out training	
Adoption of healthy practices is limited	Roll-out of Digital Green model	Train FLWs to produce video, facilitate discussion, and conduct ongoing monitoring	0.55
		Produce local video content around best practices	
		Roll out screenings and discussion	
Limited literacy means it is difficult for pregnant women to get the health information they need, in a convenient format	Adoption of the Mobile Kilkare model (will be rebranded for Haryana)	Produce local messages in Haryanvi dialects	1.17
		Promote service through Mobile Kunji cards	
		Disseminate videos produced through Digital Green through Whatsapp	No cost

SECTION 2

ADDRESSING BURDEN OF DISEASES FOR UNIVERSAL HEALTH COVERAGE

10. NUTRITION

10.1 *Introduction*

Under-nutrition is directly caused by poor food intake and illness. However, there are many indirect determinants including poor water and sanitation, low educational status, and poverty. An undernourished child is vulnerable to pneumonia, diarrhoea, and other illnesses, and is at high risk of mortality. Under-nutrition is responsible for 45 percent of deaths of children under 5 years.[67] Under-nourished children who survive typically suffer recurring illness and faltering growth – irreversibly damaging their development and their cognitive abilities. This morbidity is expensive for the health system; the cost of treating under-nutrition is 27 times more than the investment required for its prevention.

It is globally acknowledged that first 1,000 days of life, from conception to the end of the first two years, is a critical window for addressing under-nutrition. Damage that occurs during this period is irreversible. Nearly 50 percent of stunting by 24 months actually occurs in the womb, caused by maternal under-nutrition, especially during the first trimester of the pregnancy. Hence, it is the period of pre-pregnancy, pregnancy, and the first two years of life, as well as in adolescence, that should be the programmatic focus to reduce under-nutrition.

10.2 *What is the situation now?*

- As discussed in the background chapter, DLHS 4 2012-2013 reveals that 31.9 percent of under-5 children are stunted, 36.2 percent are underweight and 32.3 percent are wasted, 18.6 percent of these last being severely wasted (see Annex G, Table G-1). These high rates of under-nutrition put children at a lifetime disadvantage for health and wellness.[68]
- Haryana has much worse nutritional status than its neighbor Punjab; with an 8.5 percentage point difference in severe wasting for children under 5 (see Annex G, Table G-1).
- Additionally, many indicators have gotten worse over time, indicating this is an area that needs urgent attention.
- There are high levels of anemia among pregnant women, but only 30 percent consume the required IFA supplementation (see Table 2). This leads to low birth weight babies and under-nutrition in later life.
- Despite 91 percent of deliveries by skilled personnel, early initiation of breastfeeding occurs for only 55 percent newborns (DLHS 4).
- There is a lack of up-to-date data on nutritional status and the various determinants of under-nutrition, and insufficient monitoring of at-risk children.
- Facilities have limited reach to treat Moderate Acute Malnutrition (MAM) and Severe Acute Malnutrition (SAM) children.

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[67] Black, R.E., Victoria, C.G., Walker, S.P., Bhutta, Z.A., Christian, P., De Onis, M., Uauy, R. (2013). Maternal and child undernutrition and overweight in low-income and middle-income countries. *The Lancet*, *382*(9890), 427-451.

[68] United Nations Children's Fund (2013). Improving child nutrition: The achievable imperative for global progress. New York.

- There is a lack of leadership around nutrition, and a lack of intersectoral convergence across different levels of Integrated Child Development Services (ICDS) and health.

10.3 *What do we want to achieve?*

- Improved child nutritional status, reduced stunting, wasting, underweight, and micronutrient deficiencies for children under 5.
- Improved adolescent and maternal nutritional status
- Improved sanitation, availability of safe drinking water, and reduced open defecation
- Increased household consumption of iodized salt to 90 percent of the population; reduced prevalence of iodine deficiency disorders (IDD) to less than 5 percent

10.4 *What do we need to do?*

10.4.1 Establish state and district nutrition cells within health department

Haryana will submit the following proposal in its annual PIP:

a. A district nutrition associate in each district's NRHM Program Management Unit (PMU) to support planning and monitoring of the implementation of all nutrition programs at district level and

b. A State Nutrition Cell as a focal point for planning, intersectoral coordination, and monitoring of all nutrition programs and research in the state, spearheaded by the Department of Health and Family Welfare's Village Health Nutrition Day (VHND) unit, micronutrient supplementation programs (Iron, Vitamin A, and Iodine), Infant and Young Child Feeding (IYCF) nutrition monitoring, Weekly Iron Folic Acid Supplementation (WIFS), and so forth.

The State Nutrition Cell will be a part of the state's NRHM PMU. It will be staffed with a nodal officer (government staff), two nutrition officers and a nutrition consultant qualified in nutrition and management (contractual basis), IDD cell officer, and support staff. The nodal officer will report to the Additional Director, Health and Family Welfare.

In each district, District Nutrition Cells will be established in the District PMU with a nutrition program associate in each district reporting to and working under the guidance of the district Reproductive and Child Health officer. The cost of the model will be the same as Gujarat State and District Nutrition Cells, in existence since 2008.

10.4.2 Do intersectoral coordination

To ensure that addressing under-nutrition remains a priority, a Nutrition Council will be set up with a high-powered steering committee headed by the Honorable Chief Minister, with an executive body operated through the Chief Secretary/Additional Chief Secretary office. The steering committee will meet annually to monitor progress on nutrition indicators and ensure coordination among various departments working on 10 essential nutrition interventions. Each department will delineate the "extra efforts" they will be doing to universalize the coverage of essential nutrition interventions channeled through their service delivery system and which they will be accountable for. Hence, for every essential intervention, there will be a lead and supporting department. The interdepartmental collaboration will also be used to maximize the resource allocations, to avoid duplication of efforts, and promote joint

action. Models such as Maharashtra, Gujarat, and Madhya Pradesh will be examined to understand lessons learned. (See Table 22 and Box 6)

TABLE 19: DEPARTMENTS AND PROGRAMS FOR DELIVERY OF ESSENTIAL NUTRITION INTERVENTIONS

Department	Program
Women and Child Development	• ICDS Program • Sabla and Kishori Shakti Yojana • Indira Gandhi Matritva Sahyog Yojana (IGMSY)
Health and Family Welfare	• Micronutrient Programmes - Vitamin-A, Deworming, Iodine, Iron • Infant and young child feeding • Facility and community-based SAM management • VHNDs • Family Planning • Weekly Iron and Folic Acid Supplementation • National School Health Services Programme
Department of School Education	• Mid-Day Meal Scheme
Panchayat Department	• National Rural Drinking Water Supply Program • Jalmani Programme AND State Incentive Scheme on Sanitation • Total Sanitation Campaign- 'Nirmal Bharat Abhiyaan'
Food and Civil Supplies	• Public Distribution System
Livelihood Mission	• Women Self Help Groups that prepare hot cooked and THR for ICDS beneficiaries.

Box 6: Complementary activities for improving nutrition

Interventions complementary to those led by the Haryana Department of Health and Family Welfare, could be led by the ICDS scheme and other departments. The interventions include:

Establish an Annaprashan Day

ICDS provides fortified take-home rations to children 6-36 months. However, mothers often do not know how to prepare the food in this ration. Anganwadi workers (AWWs) will start celebrating *Annaprashan* in Anganwadi Centers every month for all infants 6-9 months, where they will teach mothers how to cook complementary foods.*

Nutrition MIS

Strengthening the continuum of care is integral to improving nutritional status. This can be done through active monitoring of a patient tracking system. The state will design a record-based HIS specifically to monitor key nutrition indicators.

Distribution of fortified food

Ready-to-use energy-dense complementary foods for children older than 6 months will be prepared under The Haryana State Co-Op, Supply and Marketing Federation Ltd. The premixes will be transported through the Public Distribution System to the Anganwadi Centers.

Fortification of flour

This strategy will help to address the micro-nutrient deficiencies among all age-groups but particularly children. Wheat is consumed daily by the majority of the population, so this intervention will have wide reach. A pilot program of wheat flour fortification with iron folic acid and B-12 will be done in Ambala district and later scaled up in the state.

Phulwaris

A crèche facility will be established to provide a secure and stimulating environment for children of working women 6-36 months. These crèches will operate 6-8 hours every day, enabling mothers to work and older siblings to attend school. Every crèche will be managed by one or two selected female workers from the local community; they will have no more than 20 children. Children will be fed two hot meals consisting and two protein-rich snacks daily including boiled eggs and iron supplements biweekly. The unit cost per crèche is Rs. 15 per child per day.

Partnerships with academics, corporates, and NGOs

An enabling environment will be created to forge partnerships with academic and bilateral organizations and civil societies for their research, monitoring, and training input and to create an alliance for joint proposals with member organizations. Medical colleges will support treatment SAM and will build capacity of medical staff (doctors, nurses, and paramedical staff) on malnutrition, micronutrient supplementation, and IYCF practices at the facility level. Haryana will mainstream nutrition into medical and nursing curriculum to ensure graduates and postgraduates of medical and nursing institutions have required skills in nutrition.

*Department of Women and Child Development, Government of Gujarat (2010) Annaprashan Day Guide. http://www.wcd.gujarat.gov.in/download/AnnaprashanGuidebook.pdf, accessed 7 November 2014.

10.4.3 Develop an action plan

An intersectoral implementation plan with clearly demarcated responsibilities and a timeframe needs to be developed. The action plan needs to focus on the list of evidence-based interventions listed in Table 22, and especially all the strategies on the following pages. The government is already committed to strategies and implementation should focus on issues of quality, effective coordination across sectors, timeliness, and effectiveness.

TABLE 20: TEN PROVEN INTERVENTIONS TO REDUCE UNDER-NUTRITION

Care for women before and during pregnancy	Infant and young child feeding practices	Access to health services and healthy environment
1. Preventing pregnancies: too early, too close, too many 2. Adequate food, nutrition, and health services for adolescents and women (before, during, and after pregnancy) to prevent anemia and under-nutrition in adolescent girls and women	3. Initiation of breastfeeding within 1 hour of birth 4. Exclusive breastfeeding during the first six months of life, including appropriate infant feeding practices for children exposed to HIV 5. Timely introduction of complementary foods at six months along with continued breastfeeding for two years and beyond 6. Age-appropriate foods for children six months to two years (quality, quantity, and frequency)	7. Immunization and bi-annual Vitamin A supplementation with deworming 8 Appropriate feeding for children during and after illness 9. Therapeutic feeding for children with severe acute malnutrition in facilities and at home/community level 10. Improved access to safe drinking water and sanitation education and commodities

10.4.4 Expand and strengthen VHND package

VHDNs can be expanded to include a more comprehensive range of nutrition-support services such as:

- Enrolling reproductive age women and recording their weight, offering them weekly iron folic acid tablets, screening them for risk factors (urinary tract infection, low Body Mass Index, etc.), and linking them with family planning services.
- Reporting of pregnancy weight monitoring as well as rate of weight gain in second and third trimester (1.5 kg per month weight gain is recommended).
- Providing pregnant mothers iodized salt free of cost, starting from first trimester of pregnancy through lactation.
- Providing maternal calcium supplementation (1g/d) (for pre-eclampsia and eclampsia prevention) in last three months of pregnancy and through six months of lactation.
- Improving compliance for IFA supplementation given after first trimester.
- Providing folate tablets in first trimester to prevent neural tube deficits.
- Providing intermittent treatment for malaria with chloroquine (12 tablets) and prevention through spraying and insecticide-treated bed nets and better linking of NRHM and National Malaria Control program in malaria-endemic areas.
- Screening and treating urinary tract infections.
- Providing maternal deworming in pregnancy.

To achieve this, a revised VHND protocol will be developed and supportive supervision provided to ensure quality implementation.

10.4.5 Manage malnourished children in the facility and community

The Integrated Program for the Management of children with SAM will have four components:

- Community mobilization
- Inpatient treatment
- Outpatient treatment
- Supplementary Nutrition Program for management of acutely malnourished children.

Severely wasted children will be screened at the community level using Mid-Upper Arm Circumference (MUAC) measurements. They will be treated in Nutrition Rehabilitation Centers (NRCs) until an outpatient program is established. With full Community-based Management of Acute Malnutrition (CMAM) package, children without complications will be treated using and only complicated cases will be admitted to NRCs.

- **Additional NRCs:** NRCs will be established in all 21 districts. Capacity building on facility-based management of SAM for doctors, nurses, and nutrition counselors will be done using a standard training module. Travel support for follow-up visits, extremely important, will be provided along with wage compensation. Each NRC will be equipped with counseling material.
- **CMAM**: The complete CMAM approach – from community to facility and back to community – will be used so that children do not relapse to their original condition. Children with SAM but without any medical complications will be treated with evidence-based, globally recommended energy-dense therapeutic food produced at state level. Children discharged from the CMAM program will be linked with ICDS and enrolled in its Supplementary Nutrition Program.

10.4.6 Institute a maternal package at NRCs

Many mothers who bring their SAM children to NRCs are also severely malnourished, but no services are provided to them. The children's stay at the NRC could be an opportunity to provide mothers with a check-up, counseling, and services. Procedures for this will be developed after the state agrees on such a strategy.

10.4.7 Strengthen ANC through subcenters

To improve maternal nutrition during pregnancy, ANC services (IFA tablets, tetanus toxoid injection, health check-up) will be strengthened and complemented by distribution of iodized salt and calcium tablets to prevent iodine and calcium deficiency. High-risk women (low weight, primipara, multi-parity) can be identified and given a full meal, food supplements, and counseling. This provision will improve health and nutrition of the expectant mother and fetus and eventually will have positive impact on pregnancy outcomes. Successful delivery of this intervention will need convergence of NRHM, the Department of Supplies, and ICDS (delivery point-Aganwadi centers). Testing for iodine in urine needs to also become integrated into the clinical care protocols for ANC.

10.4.8 Integrate iodine testing into existing laboratory infrastructure

There is a need to equip existing labs with the appropriate drugs and equipment to ensure routine iodine testing. It is likely existing human resources can absorb these functions.

10.4.9 Expand the Yashoda Program from district hospitals to PHCs

Currently, volunteer maternal assistants working in district hospitals support the mother through the delivery process and encourage early initiation of breastfeeding. This model can be expanded to high-volume PHCs.

10.5 *How much will this cost?*

The five-year estimated cost of improving nutritional status is Rs.306 crores. Table 24 breaks down the total cost by key strategy.

TABLE 21: KEY STRATEGIES AND ESTIMATED COST (NUTRITION) (RS. CRORES) 2015/16-2019/20

Current situation	Standards or target to achieve	Key strategies to fill gap	Estimated Cost
Poor intersectoral coordination	Improved intersectoral coordination	Develop an implementation plan	No cost
Pregnant women, new mothers, and their families do not have access to the information and support they need	Expanded VHNDs	Develop expanded protocol	14.78
		Train functionaries in the protocol	
	Annaprashan Day	Adapt and implement the Gujarat protocol and training materials to the Haryana context	
Insufficient monitoring of nutritional status	Nutrition MIS	Design nutrition MIS	No additional cost
		Provide supportive supervision through monthly meetings with subcenter, anganwadi center, and PHC staff	
Limited reach of nutrition support services	Additional NRCs	Identify locations with high density of under-nourished children	No cost
		Identify health infrastructure not currently being used in these locations (wings of hospital etc.)	No cost
		Establish sanctioned posts for staff	No cost
	CMAM	Develop defined roles and areas for coordination for AWWs, ANMs, and ASHAs around MAM and SAM treatment	74.56
		Establish protocols for supportive supervision around nutrition monitoring and support for ANMs and AWWs	
		Roll out training of supervisors	
Mother's nutrition status affects that of children. There is an opportunity to also treat mothers when they take their children to the NRCs	Maternal package at NRCs	Develop package of care for mothers, including counseling and fortified foods	44.09
		Train providers in package and roll out.	
	Distribution of fortified food	Use nutrition monitoring MIS to identify MAMs and SAMs	No cost

Current situation	Standards or target to achieve	Key strategies to fill gap	Estimated Cost
		Use MIS to rationalize procurement, ensuring correct amounts	No cost
		Procure and distribute fortified food	116
		Use MIS to record distribution through VHNDs, anganwadi centers and subcenters	No cost
Frontline workers do not have the skills required to deliver quality care	Expanded skills of frontline workers	Assess training needs	
		Roll out required training	
		Ensure post-training follow-up and refreshers through monthly meetings at the PHC level	
Many women are anemic during pregnancy, do not get comprehensive ANC	Strengthened ANC through subcenters	Ensure pregnant women are registered using MCTS in first trimester	No cost
		Use MCTS data to ensure appropriate procurement of IFA tablets	No cost
		Strengthen BCC around the importance of taking IFA	No cost
		Use MIS to record distribution through VHNDs, anganwadi centers and subcenters	No cost
Goiter prevalence more than 5%	Integrate iodine testing into routine ANC	Revise protocols to include iodine testing	No cost
		Procure equipment and supplies for 1 lab per 3 districts	NA
		Train existing lab staff	
	Expand the Yashoda Program from district hospitals to PHCs	Identify high-volume PHCs	No cost
		Recruit, train, and deploy additional Yashodas	NA
		Provide monitoring and supervisory support	No cost
Under-nutrition caused by a range of social determinants, needs a coordinated, intersectoral approach	Intersectoral coordination	Create units at state and district levels	No cost
		Provide basic training	NA
		Ensure duties are part of functionaries' job descriptions	No cost
SHGs have limited scope of work	Strengthened SHGs	Give motivational allowance to incentivize active SHGs	3.9
Lack of leadership in the area of nutrition	Fellowship program focused on nutrition	Design program with attached stipend	4.37
		Advertise program	
		Recruit fellows	
		Provide supportive supervision to fellows	
Promotion of nutrition is moderate	Increased promotion of nutrition and healthy practices at school	Use information, education and communication (IEC) tools Train school staff	26.39

Current situation	Standards or target to achieve	Key strategies to fill gap	Estimated Cost
No crèches available	Crèches established	Provide infrastructure , equipment, training, supportive supervision	20.84
Current approaches not working, need for new ideas and resources	Collaboration with home science / medical colleges	Provide travel support TA/DA to teachers Provide supportive supervision and capacity building	0.76
	Partnership with the corporate sector	Create case for support	
		Hold high-level symposium, appoint liaison office to work with corporate sector	

11. REPRODUCTIVE, MATERNAL, AND CHILD HEALTH +ADOLESCENTS

11.1 *Introduction*

Reproductive and child health has been the focus of health system improvements since the launch of the NRHM in 2006. The High Level Taskforce Report on Health Indicators pointed out that the state has dramatically improved its health services in that time.[69] However, with an IMR of 42 and an MMR of 153, this agenda is unfinished. Unmet need for contraception is as high as 30 percent. To achieve universal coverage of reproductive and child health services there is a need to scale up existing efforts, leveraging lessons learned and the momentum that has gathered over the past eight years. The successes of the NRHM in the area of reproductive and child health also provide an excellent platform for integration of other vertical disease programs.

11.2 *What is the situation now?*

- While the IMR has been falling, newborn and especially early newborn mortality has remained stagnant. The interventions required to address early newborn mortality are all in the delivery room.
- The NHM has prepared a 25/75 strategy that focuses on tracking high-risk pregnancies, improving delivery care at high-volume clinics, optimizing the caseload of health workers through improved referrals, improving demand generation for quality services and institutional deliveries, using Mewat and Palwal districts as a model. This strategy includes a "district improvement coordinator" to lead facility-level improvements.
- More than 600 delivery points were surveyed in a baseline assessment. A major finding was lack of adequate skills among the health workers. Out of that, 300 delivery points in the state are conducting more than 30 deliveries per month.
- The state currently has 22 Special Newborn Care Units (SNCUs), 66 New Born Stabilization Units (NBSUs), and 316 New Born Baby Corners (NBCCs). With the increase in facility-based births, the workload has increased, undermining the quality of care.
- Every year, about 8 million low birth weight babies are born in India, about 27 percent of the total live births. These babies account for over 80 percent of neonatal deaths; 65 percent of deaths are attributable to preterm infants and 19 percent to infants who are term but small for gestational age.[70] Typically, low birth weight newborns are handed over to the relative or kept separate from the mother.
- Due to this high volume and increased workload, essential newborn care is not provided. Particularly lacking are staff nurses for deliveries – there is only one staff nurse to do deliveries in

[69] Haryana State Health Resource Centre, 2013. High Level Taskforce Report on Health Indicators, Haryana, 2013. Panchkula.

[70] Mason, E., McDougall, L., Lawn, J. E., Gupta, A., Claeson, M., Pillay, Y., ... & Chopra, M. (2014). From evidence to action to deliver a healthy start for the next generation. *The Lancet*.

most facilities. This failure to deliver quality care increases the risk of mortality.

- Contraceptive prevalence is only 50 percent and has dropped 12 percentage points since 2007 (see Table 25). Concurrent Evaluation Survey data show a variation in contraceptive prevalence from 25 percent in Mewat to 87 percent in Ambala. The most prominent method (53 percent) is female sterilization.
- There remains 30 percent unmet need for family planning in the state, which has nearly doubled from 16 percent in 2007, indicating that the health system, needs to increase its outreach. In Mewat and Palwal, the unmet need is 80 percent.[71]

TABLE 22: CONTRACEPTIVE PREVALENCE AND UNMET NEED IN HIGH-INCOME STATES

State	Contraceptive prevalence rate: any method		Total unmet need	
	DLHS 3	DLHS 4	DLHS 3	DLHS 4
Haryana	62	50.3	16	30.4
Punjab	69.3	63.9	11.9	15.3
Maharashtra	63.8	66.2	14.2	19

Data source: DLHS 4

11.3 *What do we want to achieve?*

- Have round-the-clock availability of birth attendants trained to provide essential newborn care and resuscitation services in every delivery point in the state.
- Reduce IMR from 43 to 25 and MMR from 153 to 75.
- Improve tracking of high-risk pregnancies.
- Eliminate unmet need for family planning; decrease the Total Fertility Rate from 2.3 to 2.1.
- Increase birth spacing, improve child health outcomes.

11.4 *What do we need to do?*

11.4.1 Do quarterly antenatal check-up weeks and hold fixed ANC days

The ANM will conduct ANC sessions in different parts of her catchment area each week. ASHAs will mobilize pregnant women from their respective catchment areas to the session site for ANC. The weekly ANC sessions, organized like VHNDs, will be used as a platform to identify and follow up high-risk pregnancies: Line listing of identified high-risk pregnancies with their complete records will be prepared from the ANC weeks. The data will be entered into High Risk Pregnancy software that will be made available to the state MCTS call center and 102 control rooms for follow-up.

[71] Director of Family Welfare's figure

11.4.2 Establish quality improvement teams at the district level

District monitoring teams will be set up to visit facilities, and do an assessment of the facility management and the technical capacity of the staff. A plan will be developed to address gaps, including hands-on training to address capacity gaps. For interventions to have the largest impact, high-volume sites where most deaths occur will be targeted. Four or five facilities with the highest caseload in each district will be identified (approximately 70 percent of the district's caseload in total). These facilities will include district and sub district hospitals, FRUs, CHCs, and PHCs.

11.4.3 Follow up each high-risk pregnancies

Apart from regular follow-up of high-risk pregnancies by ANMs and ASHAs, the call agent at the state MCTS call center will also do follow-up**.** One agent will be designated for each of the HPD and one for every two other districts**.** There will be approximately 238 new high-risk pregnancies for follow-up every month and at any point in time there will be 2,285 such pregnancies in the district. Call agents will follow up approximately 100 pregnancies every day via telephone and will also follow up with approximately 100 ASHAs and inform them of places of delivery for women.

The delivery of a high-risk pregnancy will be ensured at an FRU or tertiary center if the mother continues to be high risk until the time of delivery**. A s**upervised delivery under a specialist or Lady Medical Officer will be ensured at the FRU**.**

11.4.4 Improve demand generation for institutional delivery

Using subcenters as a platform, especially in poor-performing districts, efforts will be made to strengthen the relationship between pregnant women and facilities, to improve the continuum of care and encourage healthy behaviors.

11.4.5 Rationalize facility use and patient referrals

Delivery points will be strengthened by providing HRH and ensuring continuous availability of services. The first step will be to categorize the health facilities into four categories: 24/7 PHCs, high-load FRUs, FRUs, and tertiary health care. The next step will be to provide referral linkages and well-defined SOPs for referral. This will be actively monitored to ensure implementation.

11.4.6 Do onsite training

Skills for essential newborn care and resuscitation require regular refresher training. These trainings can be provided on site to health care staff by a team of staff nurses in consultation with the district training officer. All facilities within a district (about 25) will be visited twice a month.

11.4.7 Provide additional staff and resources to high volume sites

There is a need to establish fully functional NBCCs at all facilities conducting deliveries (L1) according to the norms prescribed in the Maternal and Newborn Health toolkit, NBSU (L2) and SNCU (L3) and provide sufficient staff. Total estimated births in Haryana are Rs .055 crore per annum. Ten percent of children are admitted to hospital for some illness, of which 3 percent are newborns admitted to the SNCU. This makes it essential to provide the facilities with the latest technology and skilled HRH.

11.4.8 Implement clinical protocols

To ensure standard quality of care, it will be necessary to implement standardized clinical protocols at each level for essential new-born care, including resuscitation, admission and discharge policy, breastfeeding, use of equipment, and so forth.

11.4.9 Establish Kangaroo Mother Care units

Kangaroo Mother Care (KMC)[72] is a low-resource, evidence-based, high-impact intervention and standardized care for low birth weight infants. It can prevent up to half of all deaths in infants weighing less than 2,000 g. However, it is still under-practiced. It should be part of routine care. An exclusive KMC unit should be established.

11.4.10 Increase the use of spacing methods

There is a need to increase the number of providers trained in inserting IUD380As, and to increase the scheduling of fixed-day Intrauterine Contraceptive Device (IUCD) services. ASHAs need to be mobilized to bring women in for IUCDs. To facilitate this, incentive payments of Rs 150 for medical officers and staff nurses and Rs 150 for ASHAs are proposed for every new adoption.

11.5 *How much will this cost?*

The overall estimated cost of strengthening RMNCH+A care in Haryana would be Rs.563.17 crores over the next five years. Table 26 breaks down the cost of key strategies.

TABLE 23: KEY STRATEGIES AND ESTIMATED COST (RMNCH+A) (RS. CRORES) 2015/16-2019/20

Current situation	Standards or target to achieve	Key strategies to fill gap	Estimated Cost
Maternal health			
Women with high-risk pregnancies are not getting the care they need	Fixed ANC days and weeks Detection and management of high-risk pregnancies, training of HRH in CEmOC, maternal death reviews	Have ASHAs mobilize women in their area to the ANC day	44.6
		ANM runs ANC day and identifies high-risk pregnancies to be actively followed up	
		Follow up each high-risk pregnancy	
		Do ongoing check-ups and delivery at FRU/tertiary center	

[72] Kangaroo mother care is a method of care of preterm infants. Infants are carried, usually by the mother, with skin-to-skin contact. See http://www.who.int/maternal_child_adolescent/documents/9241590351/en/

Current situation	Standards or target to achieve	Key strategies to fill gap	Estimated Cost
Uneven quality of service provision	Increased capacity, motivation and engagement of providers Adolescent health intervention programs	Identify high caseload facilities	No cost
		Monitor with a district quality team	No cost
		Identify and implement adolescent health programs	65.46
In some districts, the institutional delivery rate is low	Improved demand generation for institutional delivery	Identify 10 subcenters in each district for focused intervention (# home deliveries, highest # neonatal deaths)	No cost
		Conduct mothers meetings, maternal and infant death reviews	No cost
		Improve linkage to delivery points	No cost
Large facilities are overburdened, small facilities underutilized	Rationalized facility use and patient referrals	Categorize facilities into four groups	No cost
		Establish well-defined referral network with SOPs for referral	No cost
		Provide monitoring and supervision	No cost
High unmet need for family planning	Increased use of IUCDs for increased spacing	Train providers in inserting IUCDs	4.73
		Institute incentive payments for each IUCD inserted	
		ASHAs mobilize to bring women to the facility	
	Management of pneumonia, sepsis, diarrhea, Vitamin A and K supplementation, albendazole, full immunization Establishment of SNCUs, Essential Newborn Care Program, Home Based Post Natal Care		49.35
			Total cost of maternal and adolescent health 164.14

Current situation	Standards or target to achieve	Key strategies to fill gap	Estimated Cost
Child health			
Staff do not have required skills to deliver quality care	Increased provider competencies	Organize refresher trainings	13.9
There are insufficient staff at high-volume sites to deliver quality care	Increased number of staff	Establish a SNCU	382
		Newborn Sick Unit	
		Improve delivery points	
Staff do not know how to implement key services	Staff have the guidance they need to deliver essential services	Orientation on KMC, admission policy discharge policy Breastfeeding policy and use of equipment	0.0084
Premature and low weight babies are kept apart from their mother	Increased provider competencies in KMC	Establish KMC units	3.13

12. TUBERCULOSIS

12.1 *Introduction*

TB mostly affects young adults, in their most productive years. However, all age groups are at risk. India bears the highest burden of the global caseload with 2.2 million cases. Every day, more than 1,000 people die from TB in India, or two people every three minutes. However, the RNTCP program has enjoyed success: TB prevalence per lakh population has been cut in half, from 465 in year 1990 to 230 in 2012.[73] The country has had a National Tuberculosis Program since 1962. The program was revised in 1992, incorporating DOTS. The RNTCP was expanded to achieve nationwide coverage in March 2006, with special emphasis on drug-resistant TB.

12.2 *What is the situation now?*

- In Haryana, about 496 patients have been diagnosed as Multi Drug Resistant (MDR). Their number is increasing, with 120 MDR cases reported in 2011 and 168 in 2012.
- The total TB cases detected in 2013 were about 38,205.
- Equipment shortages: currently 22 binocular microscopes are not working, which has reduced the case detection rate.
- Staff turnover is high, and there is a high level of vacancies.
- There is little monitoring and supervision.
- There is no knowledge sharing – best practices are not identified or shared.
- District-level capacity is uneven.
- There is only one lab for MDR TB, and Intermediate Reference Laboratories are insufficient.
- HRH shortages include medical officers, lab technicians, treatment supervisors, transport services, STs, and field staff.
- About 60 percent of TB care is provided in the private sector, but the quality of care is uneven, which can lead to MDR TB. The Nikshay system does not currently capture case detection and cure rates through private providers.
- There is poor integration of the RNTCP into the mainstream health system, with 98 PHCs (out of 345) not providing TB services. In addition, there is a missed opportunity to increase coverage by the lack of integration between HIV and TB.

12.3 *What do we want to achieve?*

- Universal access to free, quality-assured TB services for all patients, with supervision and patient support

[73] Central TB Division, Government of India (2014). *TB India 2014*. New Delhi.

- Achievement and maintenance of a cure rate of at least 90 percent among newly detected infectious (new sputum smear positive) cases
- Early case detection, and diagnosis through quality-assured bacteriology to achieve and maintain detection of at least 90 percent of cases
- 100 percent entry of cases in Nikshay
- Increased case detection rate, by having appropriate equipment and supplies in place, more microscopes, Cartridge Based Nucleic Acid Amplification test (CB NAAT), liquid cultures

12.4 *What do we need to do?*

12.4.1 Purchase equipment at the state level

To increase the case detection rate, the right equipment and supplies need to be in place. Twenty-two binocular microscopes are broken and have not been replaced, despite notification of the Central TB Division at the Ministry of Health and Family Welfare. These need to be purchased immediately. In addition, to identify and treat those with MDR TB, one CB NAAT machine along with liquid culture and solid culture in at least two government medical colleges is required. The Directorate General of Supplies and Disposals rate contract guidelines should be followed in case of purchase. Procurement should be made as planned and approved in PIP as per RNTCP norms and guidelines.

12.4.2 Transform every PHC into a DMC, make every DMC an HIV testing facility

To facilitate the integration of RNTCP into the mainstream health system, every PHC should become a Designated Microscopy Center (DMC) so there is a common delivery point for all services. There are 247 DMCs in 345 PHCs, with 98 PHCs that can be upgraded to also serve as DMCs. This will also increase access to TB care, improving the case detection rate. Additionally, every DMC has lab testing, and these facilities should also provide HIV testing. Right now there are only 67 HIV testing centers; this should be expanded to all existing 247 DMCs.

12.4.3 Reduce transfer of skilled health workers

Trained RNTCP contractual staff should not be frequently transferred, as this will directly affect the case detection rate. To prevent staff turnover, adequate salary increases should be provided. The HRIS should be used to rationalize transfers.

12.4.4 Fill vacancies

Vacant RNTCP posts should be filled on priority basis.

- Accountant: 21
- District Program Coordinator: 21
- District-level Public-Private Mix (PPM) / Advocacy, Communication and Social Mobilization (ACSM) Coordinator: 21
- Counselor for DOTS-plus site: 1
- Data Entry Operators-STF Chairman at DR-TB Center: 1

- Microbiologist- External Quality Assurance (EQA) at Intermediate Reference Laboratory Karnal: 1

12.4.5 Increase frequency of supervisory visits and oversight

The Deputy Civil Surgeon (TB) should ensure monthly supportive supervision and monitoring of the district and subdistrict levels to identify and address issues at the block and district levels, along with unscheduled "surprise" visits. These visits can focus on building capacity around data entry into Nikshay. Vehicles and other support should be provided to facilitate field visits.

The Civil Surgeon should assess the performance of the staff and non-performance should be considered as dereliction of duty and be reflected in Annual Confidential Report, and considered for pay and promotions.

12.4.6 Hold refresher trainings at the district level

Basic and refresher trainings need to be rolled out at the district level. High-performing districts should showcase their best practices to other districts through site visits and collaborative activities.

12.4.7 Improve quality of Nikshay data

Entries should be completed on a quarterly basis. Annexures/forms must be legible. Supervisory visits can support data capture, entry, and use.

12.4.8 Increase outreach and coordination to reduce loss to follow-up

Frequent IEC and community mobilization activities should be conducted to encourage people to stick with their drug regimen. District TB officers should convene monthly meeting of Data Entry Officers to review the system. Mobile phones and SMS can be used for patient tracking and follow-up.

12.5 *How much will this cost?*

The overall estimated cost of improving the status of TB would be Rs.6.54 crores over the next five years. Table 27 breaks down the cost of the key strategies.

TABLE 24: KEY STRATEGIES AND ESTIMATED COST (TUBERCULOSIS) (RS. CRORES) 2015/16-2019/20

Current situation	Standards or target to achieve	Key strategies to fill gap	Estimated Cost
Shortage of binocular microscope	Purchase equipment at the state level	Issue binocular microscope	.033
Suboptimal utilization of resources		Transform every PHC into a DMC, make every DMC an HIV testing facility	No cost
Frequent change of trained staff	Reduce transfers of trained staff	Issue government order to stop transfers of trained staff	No cost
Delayed recruitment/ vacant posts at district and state level	Fill vacant posts on a priority basis.	Recruit staff	4.69
Poor supportive supervision and program monitoring	Increase frequency of supervisory visits and oversight.	Deputy Civil Surgeon (TB) ensures regular supportive supervision and monitoring of the districts and subdistrict level to identify challenges and address them accordingly. Deputy Civil Surgeon (TB) does monthly evaluation of their district. Deputy Civil Surgeons do more surprise visits	No cost
Uneven capacity at the district level	Hold refresher trainings	Plan basic and update training at district level. Share best practices	1.81
Financial issues: delay in various purchase matters	Follow DGS & D rate contract guidelines in case of purchase. Procurement should be made as planned and approved in PIP as per norms and guidelines of RNTCP.		No cost
Nikshay entries suboptimal	Improve quality of Nikshay data	Require that entries be completed on a quarterly basis with annexures/ forms	No cost
Missing patients. Level A-general population Level B-DMC Level C-DTC Level D-Medical College	Increase outreach and coordination to reduce loss to follow-up	Divide all districts into four zones for effective referral mechanism within and outside districts. District training officers convene monthly meeting of DEOs to review the system. Frequent and effective IEC and ACSM activities undertaken.	No cost

13. NON-COMMUNICABLE DISEASES AND ELDERLY CARE

13.1 *Introduction*

As was highlighted in the background section, NCDs are now the leading cause of death in adults in non-EAG states. For high-risk patients (overweight, tobacco users), multiple NCDs typically manifest simultaneously. NCDs require ongoing monitoring and care, posing a huge burden on the health system. A comprehensive, integrated approach is required both to support healthy behaviors to prevent onset of NCDs, and, where NCDs have already manifested, help patients manage their condition. NCDs and elderly care are covered by the National Program for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke, begun in 2010/11, and the National Program for the Health Care of the Elderly.

13.2 *What is the situation now?*

- Prevalence of NCDs in Haryana is high: diabetes prevalence is about 6 percent, cardiovascular diseases and hypertension about 12 percent, Ischemic Heart Disease IHD, 37 cases /1,000), stroke 1.5 per 1,000 population, and cancer 80-90 cases per lakh population.
- A state NCD cell has been established in the office of the Director General of Health Services, Panchkula-Haryana. District NCD cells have been established in Ambala, Kurukshetra, Mewat, Sirsa, and Yamuna Nagar districts. Staff has been recruited and District Health Society-NCD accounts have been opened.
- NCD/ geriatric clinics have been established and are functioning in Ambala, Kurukshetra, Mewat, and Yamuna Nagar. Geriatric wards with beds reserved for the elderly have been set up within the existing infrastructure in three districts.
- All patients over 30 years old are screened for diabetes and hypertension by health workers in Ambala, Kurukshetra, Mewat, and Yamuna Nagar.
- IEC material has been developed and is displayed in health institutions, schools, and punchyatghar. Counseling about NCD risk factors has been rolled out.
- Staff nurses and doctors from these districts have been trained in program activities including palliative care.
- An NCD and geriatric clinic was also made functional in two CHCs in Mewat (Nuh and Firozepur Jhirka).
- A state-level cancer registry[74] is operating in PGI Rohtak, through the Department of Medical Education.

[74] WHO 2014, NCD Country Fact Sheet: India. Geneva

13.3 *What do we want to achieve?*

- The most important strategy for NCD and elderly care management is strengthened primary care[75] for screening, continuum of care, and home visits. To achieve this, health worker capacity to deliver NCD services needs to be built at the PHC and subcenter levels.
- Chronic diseases must be identified as early as possible; to ensure treatment costs and morbidity are minimized.
- An NCD surveillance and monitoring system needs to be in place.[76]
- The Cancer Atlas project in Haryana should be established in PGIMS Rohtak.
- Healthy behaviors should be promoted to both prevent NCD onset and help people manage them.

13.4 *What do we need to do?*

13.4.1 Expand the current program to ensure universal coverage

The current NCD program needs to expand from six districts to all 21 over the next five years. As it expands from pilot to scale, there should be a local-level symposium to take careful account of key lessons learned.

13.4.2 Hold a screening campaign

The NCD program expansion needs to be launched with a one-time education and screening campaign. Screening should be conducted by staff nurses, and information about healthy lifestyles and NCDs provided.

13.4.3 Computer-based NCD screening and treatment protocols for ongoing routine screening, integrated into the hospital MIS

Early detection of NCDs and their warning signs helps people to better manage their health, averting morbidity and high health costs. However, currently, health workers are reluctant to take on routine NCD screening because they feel that their workload is already too high. In Tamil Nadu, computer-based screening tools for NCDs make routine screening quick and easy for health workers in secondary and tertiary hospitals. This could be piggy-backed onto the hospital-based MIS currently being developed by the Haryana State Health Resource Center. This will provide a template to build and roll out other easy-to-use treatment protocols.

13.4.4 Pilot an intersectoral NCD strategy in one district

As with nutrition, NCDs and elderly care require a multisectoral approach, including tobacco control, health education and physical activity in schools, road safety, civil society, Panchayati Raj Institutions, the Food Safety and Standards Authority of India, and others. In a variety of contexts in India, working intersectorally has been a challenge, and there is a need to build the knowledge base on how to do this more effectively. For this reason, a district-level pilot is proposed, with a complementary operations research project to document lessons learned. This would include an intersectoral working group,

[75] WHO (2014). NCD Country Fact Sheet: India. Geneva.
[76] WHO (2014). NCD Country Fact Sheet: India. Geneva.

monthly meetings to build a common vision and approach, and an intersectoral action plan with clear roles and responsibilities.

13.4.5 Strengthening the nursing cadre for NCD and elderly care

The nursing cadre (staff nurses and ANMs) should be trained and equipped to deliver NCD services in all districts, beyond the current intervention districts. This includes building capacity in testing glucose levels, clinical breast exams, VIA for cervical cancer screening, colposcopy, and counseling skill to help patient practice healthy behaviors. As the soft-skills are such an important part of NCD care, post-training supportive supervision is recommended to support nurses counsel patients effectively.

13.4.6 Use of SMS and IVR for BCC and patient follow-up

The Hospital Information System will capture details and cases of NCD patients, including contact telephone numbers. To ensure patient follow-up, and to support disease management, SMS or IVR voice calls can be used. Messaging can be developed around specific conditions and risk levels (for example, how to avoid sugar and stop smoking, the importance of adhering to drug regimens, easy ways to exercise).

13.5 *How much will this cost?*

The overall estimated cost of reducing the NCD burden in the state would be Rs.29 crores over the next five years. Table 28 breaks down the cost of the key strategies.

TABLE 25: KEY STRATEGIES AND ESTIMATED COST (NCD'S) (RS. CRORES) 2015/16-2019/20

Current situation	Standards or target to achieve	Key strategies to fill gap	Estimated Cost
The NCD and elderly programs have just begun in six different districts, and pilot coverage is minimal	Expand existing strategies to reach all districts	Procurement of Equipment	4.41
		State NCD cell	
		District NCD cell	
Health workers are reluctant to adopt routine screening, fearing it will be too time consuming	Develop computer-based screening tools as part of the hospital MIS	Adopt screening tools from Tamil Nadu into the HIS	12.31
		Provide training	
		Monitor use and provide supportive supervision	
Staff do not have sufficient skills	Train all nurses and ANMs in NCD care, including counseling	Roll out training	12.28
		Provide supportive supervision	
NCDs have many different determinants and a coordinated response is required	Establish an intersectoral coordination mechanism	Identify key stakeholders, consult	
		Convene district-level committee	
		Develop common vision and action plan	
		Meet monthly	

14. VECTOR-BORNE DISEASES

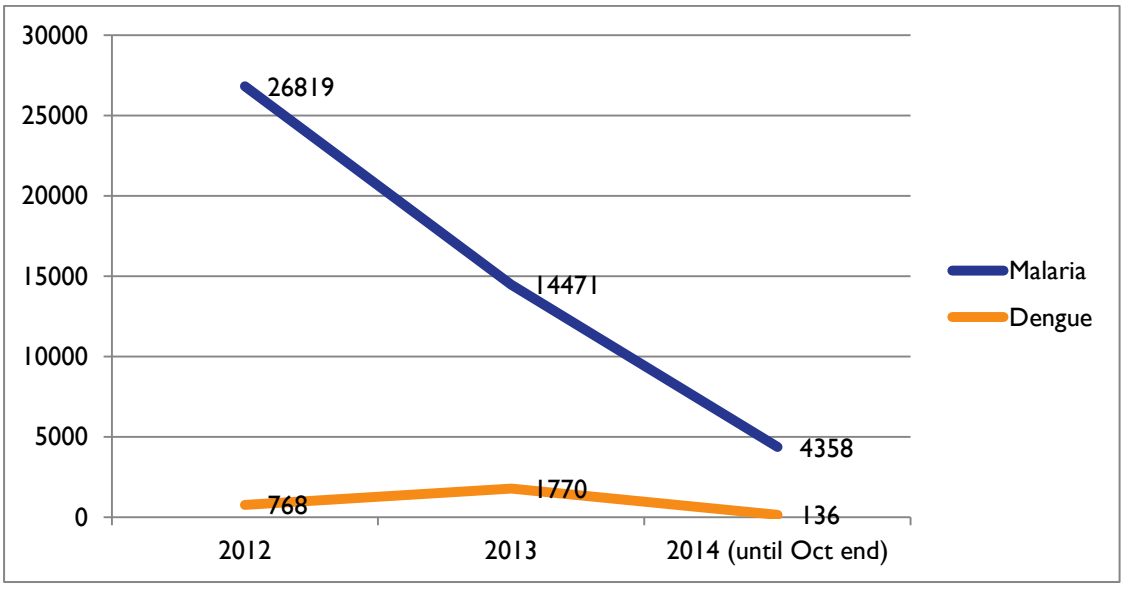
14.1 *Introduction*

Vector-borne diseases (VBDs) account for the majority of all infectious diseases, causing more than 1 million deaths globally every year. More than 2.5 billion people in over 100 countries are at risk of contracting dengue alone. Malaria causes more than 6, 00,000 deaths every year globally, most of them are in children under 5 years of age. Though most cases and deaths are reported from African countries, India and Haryana cannot ignore the incidence of VBDs. There are three main VBDs in Haryana: malaria, dengue, and Japanese encephalitis. Chikungunya has also been reported in the state but its incidence is low. Proper water management is the key to preventing VBDs because stagnant water allows vectors to propagate. In fact, all VBDs are preventable if communities and other sectors apply informed protective measures.

14.2 *What is the situation now?*

- In Haryana, VBDs are generally decreasing in incidence. Decreasing incidence of dengue and malaria are shown in Figure 10. Incidence of Japanese encephalitis and Chikungunya is negligible.

FIGURE 10: VBD INCIDENCE IN HARYANA



- Despite this decreased incidence overall, in urban areas, the risk of dengue and other VBDs has increased in recent years due to life style changes, and deficient water management including improper water storage practices in urban, peri-urban, and rural areas, allowing mosquito breeding sites to proliferate.
- Mosquitoes, which spread VBDs, prefer to breed in manmade containers such as cement tanks, overhead tanks, tires, desert coolers, pitchers, and other discarded containers and materials in which water stagnates for more than a week.

- There are shortages of HRH: 945 Multi-Purpose Health Workers posts (of 2,544 sanctioned posts) are vacant, affecting disease surveillance activities; 8 biologist posts of (of 17) and 18 insect collector posts (of 23) also are vacant affecting vector. Domestic Breeding Checkers are needed to identify the breeding mosquitoes and apply the anti-larval/anti-adult mosquito drugs.
- Six more cities (Rewari, Fatehabad, Jhajjar, Nuh (Mewat), Hansi, and Bahadurgarh) need to be covered under the Urban Malaria Scheme (UMS) for proper weekly anti-larval activities.
- Poor community participation in taking household-level preventive and control measures.
- Poor participation of other departments. Proper water management could be ensured with the help of communities and other departments with to water management responsibilities.
- Larvivorous fish hatcheries are required at the district/CHC/PHC level for production of Gambusia fish, which control mosquito breeding by eating larvae.

14.3 *What do we want to achieve?*

- Reduction in incidence of malaria, dengue, Japanese encephalitis, and Chikungunya by 50 percent by 2017.
- Malaria Annual Parasitic Incidence below one [API <1].
- Malaria Annual Blood Examination Rate more than 10 percent [ABER>10%].

14.4 *What do we need to do?*

14.4.1 Improve intersectoral coordination with a Joint Action Plan

A Joint Action Plan for the Department of Health and other departments and the community to avoid stagnant (Source Reduction Activities).

14.4.2 Institute IEC activities for improved prevention behaviors

There is a need to make the public aware of VBDs and to promote household prevention practices. A toll-free helpline should be established to assist/ guide the public, particularly dengue patients for management of platelets and so forth.

14.4.3 Increase human resources

Strengthening human resources for proper implementation of strategies of the National Vector Borne Disease Control Programme. Posts (like MPHW, field worker, and insect collectors) that were sanctioned previously need to be reconsidered depending upon the population and area. Vacant posts should be filled as soon as possible.

14.4.4 Distribute bed nets

Provision of long-lasting insecticidal nets should be made available to the public and free of cost to BPL families.

14.4.5 Construct hatcheries

Larvivorous fish hatcheries need to be built so that a sufficient number of fish are produced and released into water bodies, particularly those that form in the rainy season.

14.4.6 Additional vehicles for site visits

Provision of vehicles should also be made to all deputy civil surgeons (VBD) and biologists for monitoring.

14.4.7 Develop new software for improved reporting

New software for direct online reporting from the field (the MPHW at the subcenter and PHC levels) to district and state levels should be established, so that daily analysis of diseases can be strengthened. This is required to plan strategies, especially during transmission season.

14.4.8 Establish a UMS in all towns

The UMS should be established in all towns because the staff responsible for anti-mosquito operations (like fogging and spraying of larvicides) is posted only under the UMS.

14.5 *How much will this cost?*

The overall estimated cost of improving the VBD program would be Rs. 2.41 crores over the next five years. Table 29 breaks down the cost of the key strategies.

TABLE 26 KEY STRATEGIES AND ESTIMATED COST (VECTOR BORNE DISEASES) (RS. CRORES) 2015/16-2019/20

Current situation	Standards or target to achieve	Key strategies to fill gap	Estimated Cost
Insufficient intersectoral coordination	Improved intersectoral coordination	Create a Joint Action Plan	No cost
Insufficient public participation	IEC activities for improved prevention behaviors	Create an VBD IEC action plan	
		Create a toll-free helpline	
Insufficient human resources	Increased human resources	Fill vacant posts, sanction additional posts that expired	Cost estimated in HRH
Poor availability of bed nets	Bed nets available	Distribute bed nets	No cost
Insufficient hatcheries	Increased number of hatcheries	Construct hatcheries	0.21
Insufficient site monitoring	Additional vehicles for site visits	Purchase vehicles	2.20
Insufficient programmatic reach	UMS in all towns	Create an urban action plan	No cost

15. DISEASE SURVEILLANCE

15.1 *Introduction*

The Integrated Disease Surveillance Project, begun as a World Bank project in 2005, on 1 April 2012 was renamed the Integrated Disease Surveillance Program under the 12th five year plan. Program goals are:

- To establish a decentralized district-based surveillance system for communicable and non-communicable diseases so that timely and effective public health response can be initiated in urban and rural areas.
- To integrate existing surveillance activities to the extent possible and facilitate information sharing across all disease control programs and stakeholders to provide valid data for decision making at the district, state, and national level.

15.2 *What is the situation now?*

- Haryana state has improved surveillance, strengthening of data quality and analysis, laboratory support, and links to action.
- Trained stakeholders under the IDSP have increased disease surveillance, coordination, and rapid action in cases of outbreak.
- Reporting started in August 2006 with approximately 300 reporting units, which have increased to approximately 3,774.
- The program has achieved 100 percent timely reporting in 2014

15.3 *What do we want to achieve?*

- Greater private sector coordination
- Updates of all computer hardware

15.4 *What do we need to do?*

15.4.1 Hold reporting seminars with private sector stakeholders at the district level

District-level seminars should be held with private sector providers in all 21 districts to create a common vision around improved health outcomes and disease outbreak management. The seminars would explain responsibilities in disease monitoring. Recognition of private providers who participate in disease reporting and tracking should be done to incentivize these providers.

15.4.2 Upgrade all tech hardware

All IDSP hardware is old and needs to be upgraded for proper system functioning.

15.5 *How much will this cost?*

The overall estimated cost of strengthening disease surveillance is Rs. 1.54 crores over the next five years. Table 30 breaks down the cost of the key strategies.

TABLE 27: KEY STRATEGIES AND ESTIMATED COST (DISEASE SURVEILLANCE) (RS. CRORES) 2015/16-2019/20

Current situation	Standards or target to achieve	Key strategies to fill gap	Estimated Cost
Insufficient reporting from the private sector	Hold reporting seminars with private sector stakeholders at the district level	Map all private providers, plan seminars, invite providers	1.23.
Hardware is outdated	Upgrade all tech hardware	Purchase hardware	0.30

16. BLINDNESS PREVENTION

16.1 *Introduction*

Loss of vision is frequently preventable through proper nutrition, screening, and cataract surgery. Blindness can cause social and economic exclusion, creating a huge burden for affected households. According to WHO estimates, the population of blind people will double by 2020 due to increased longevity. The National Program for the Control of Blindness (NPCB) oversees services relating to blindness.

16.2 *What is the situation now?*

- There are 70 lakh blind people in India.
- The prevalence of blindness in Haryana is 1.1 percent, compared to 1.4 percent at the national level.
- Prevalence of refractive error in children is 5-7 percent. Children are reached through school screening programs.
- 135,471 cataract surgeries were done in Haryana under the NPCB; 221,838 school children were screened, with 17,635 found to have refractive errors and 5,958 were provided free glasses. 2,132 eyes were collected.

16.3 *What do we want to achieve?*

- Reduce blindness to 0.3 percent of the population by 2020
- Increase the coverage of screening and treatment at secondary and tertiary levels
- Establish an "Eye Health" and prevention of visual impairment strategy that provides comprehensive and quality eye care services
- Put in place appropriate human resources and infrastructure to deliver these services

16.4 *What do we need to do?*

16.4.1 Do BCC for improved eye care

There is a need to increase community awareness on eye care, stressing preventive measures.

16.4.2 Strengthen services at all levels and increase coverage

At CHC and PHC levels: The availability of equipment and the range of services at PHC and CHC levels needs to be expanded to create "vision centers." Vision centers are small, permanent facilities set up to deliver eye care services to remote and rural communities, with the objective of increasing the uptake of comprehensive primary eye care.

At the district level: Early intervention centers need to be established in all districts. They will provide comprehensive eye care services, including for children referred from the school screening programs. Regional Institutes of Ophthalmology needs to be strengthened to become centers of

excellence in various subspecialties of ophthalmology, such as pediatric ophthalmology and cataracts. Foldable Intraocular Lens should be promoted at hospitals where phacoemulsification facilities are available.

16.4.3 Increase human resources

There is a need to expand human resources for eye care, including eye surgeons and optometrists.

16.4.4 Increase outreach through improved coordination

Participation of voluntary organizations and private practitioners in eye care should be secured to expand screening camps in schools and villages. School screenings are a first step to the control of avoidable eye problems. The screenings can be expanded through coordination with the RBSK program.

16.4.5 Increase the available funding

Increase the grant of Rs 450/- per cataract to Rs 1,000 in government hospitals to maintain and further enhance the quality of surgery.

16.5 *How much will this cost?*

The overall estimated cost of strengthening blindness control program in the state would be Rs. 0.70 crores over the next five years. Table 31 breaks out the cost of the key strategies.

- Rs. 1,000,000 per district to provide comprehensive eye care services at district level
- Rs. 100,000 for each vision center as per GOI guidelines; 10 vision centers will be opened in 2014/15 as per target
- Rs 275/- per pair of eyeglasses is approved as per GOI guidelines
- Prior to 2013/14, the government sector paid Rs. 750/- per cataract surgery; this amount was reduced to Rs. 450/- per case in 2013/14
- Rs 80 is for rigid IOLs and Rs. 300-350 for foldable lenses which are used in advanced cataract surgeries
- As per GOI guidelines, Rs. 60,000/- per month per eye surgeon has been approved under the NPCB; nine of 10 sanctioned eye surgeon posts are vacant
- As per GOI guidelines, Rs. 12,000/- per month for each ophthalmic assistant has been approved; three of 10 sanctioned ophthalmic assistant posts are vacant

TABLE 28: KEY STRATEGIES AND ESTIMATED COST (BLINDNESS PREVENTION) (RS. CRORES) 2015/16-2019/20

Current situation	Standards or target to achieve	Key strategies to fill gap	Estimated Cost
Insufficient knowledge and awareness about blindness prevention	Increase knowledge and awareness through BCC	Create a BCC plan	No cost
Limited range and coverage of services at district level	Extend range of ophthalmological services in OPDs at district level under NPCB	Provide comprehensive eye care services at district level (Requirement at Annexure I)	.10
Limited range and coverage of services at PHC and CHC levels	Ensure access to vision centers	Strengthen vision centers at PHC and CHC levels Set up well-equipped new vision centers	.10
Potential to reach more children through partnership with other programs	Improve coordination between programs	Strengthen school screening under NPCB and RBSK program	Overall costs for 5 years .50
Grant for cataract surgeries insufficient	Increase the grant	Increase the grant of Rs 450/- per cataract to Rs 1,000 in govt. hospitals	
Poor availability of IOLs	Foldable IOLs should be made available	Promote foldable IOLs at hospitals where phaco facilities are available	
Limited coverage of specialist services	Establish subspecialty clinics to treat problems other than cataracts such as Pediatric Ophthalmology for management of ROP (retinopathy of prematurity)	Phase in upgrading starting in two districts, Panchkula and Gurgaon	
Insufficient human resources	Place eye surgeons and optometrists in all districts (in both regular set-ups and District Early Intervention Centers (DEICs))	Fill vacancies: nine eye surgeons, three optometrists	
		Place regular optometrist in all districts in regular set-up	
		Train optometrists for DEICs so that they can recognize minor eye ailments in early age to avoid unrepairable loss of vision	

17. HEARING LOSS

17.1 *Introduction*

Hearing impairment is the inability to hear as well as someone with normal hearing. If a person cannot hear at all, they are deaf. Hearing impairment may be inherited, or caused by maternal rubella, complications at birth, certain infectious diseases such as meningitis, use of ototoxic drugs, exposure to excessive noise, and ageing. The WHO estimates that around half of all deafness and hearing impairment could be prevented if common causes were dealt with at the primary health care level.

17.2 *What is the situation now?*

WHO estimates that approximately 63 million people in India suffer from hearing impairment, that is, there is an estimated prevalence of 6.3 percent. Very few of these people get the support they need.

17.3 *What do we want to achieve?*

- Prevent avoidable hearing loss from disease or injury and to do early identification, diagnosis, and treatment of the ear problems that lead to hearing loss and deafness.
- Rehabilitate persons of all age groups who are deaf.
- Strengthen existing intersectoral linkages for continuity of rehabilitation programs for deaf persons.
- Develop institutional capacity for ear care services by providing equipment and material and training personnel.

17.4 *What do we need to do?*

17.4.1 Implement the national program for deafness in all districts

The Ministry of Health and Family Welfare has proposed implementing the National Program for Prevention and Control of Deafness (NPCD) in six districts (Ambala, Panchkula, Hisar, Palwal, Jind, and Gurgaon) in 2013/14 by. To achieve universal coverage this needs to be expanded to all 21 districts.

17.5 *How much will this cost?*

The overall estimated cost of strengthening the NPCD would be Rs.2.22 crores over the next five years. Table 32 breaks down the cost of the key strategies.

TABLE 29: KEY STRATEGIES AND ESTIMATED COST (NPCD) (RS. CRORES) 2015/16-2019/20

Current situation	Standards or target to achieve	Key strategies to fill gap	Estimated Cost
Insufficient coverage of the national program	Expand coverage of the national program to all districts	Fill sanctioned positions	1.40.
		Provide training	0.42
		Conduct civil works	0.40

18. LEPROSY

18.1 *Introduction*

Leprosy is a chronic infectious disease caused by mycobacterium leprae. It usually affects the skin and peripheral nerves, but it has a wide range of clinical manifestations, including permanent disability if left untreated. Early case detection with appropriate treatment prevents disability, and the GOI provides multi-drug treatment free of cost. A long incubation period (generally 5-7 years) and slow onset of disability provides a long time period during which cases can be detected and cured. Lack of awareness of this disease leads to discrimination and exclusion and force patients to settle in leprosy colonies.

18.2 *What is the situation now?*

- In India, the current prevalence of leprosy is 0.26 cases per 10,000 population,[77] with 706 patients on treatment. With this metric, the disease is considered "eliminated" according to WHO status.
- The prevalence has been increasing over the past three years. In Haryana, most leprosy patients are migrants from states like Bihar, Orissa, and Chattisgarh where prevalence of the disease is high. In areas with high levels of internal migrants, such as Aminpat, the prevalence is about 1 per 10,000.
- There are too few staff available to provide leprosy diagnosis, treatment, and care in urban areas.

18.3 *What do we want to achieve?*

- Eradicate leprosy altogether
- Increase the availability of staff trained in leprosy care in urban areas
- Improve integration of leprosy into mainstream programs, utilizing ASHAs, etc.
- Diagnose and treat hidden cases of leprosy in high-risk populations
- Prevent deformity and disability among patients by Disability prevention and medical rehabilitation (DPMR) activities
- Reduce disability by performing reconstructive surgery of Grade II disability patients
- Improve coordination with social welfare department for rehabilitation of cured patients
- Do IEC among the general public to remove the stigma of and discrimination against leprosy patients.

[77] National Leprosy Elimination Program figures, as of September 2014

18.4 *What do we need to do?*

18.4.1 Target programming in urban areas

The at-risk population is urban migrants. For this reason, a specific micro-planning outreach strategy is required to target low-income urban areas, with ongoing monitoring. This would include IEC and outreach through urban community health workers.

18.4.2 Deploy urban ASHAs

Deploying urban ASHAs to detect symptoms in their catchment areas will help detect hidden cases.

18.4.3 Build the capacity of existing personnel in high-risk areas

In the high-risk areas, train existing staff (including ASHAs, staff nurses, and medical officers) so they are better able to identify and treat leprosy patients.

18.4.4 Conduct camps in high-risk areas

Skin specialists and physiotherapists can be deployed through camps held in high-risk areas.

18.5 *How much will this cost?*

The overall estimated cost of strengthening leprosy control in Haryana is Rs.5.63 crores over the next five years. Table 33 breaks down the cost of the key strategies.

TABLE 30: KEY STRATEGIES AND ESTIMATED COST (LEPROSY) (RS. CRORES) 2015/16-2019/20

Current situation	Standards or target to achieve	Key strategies to fill gap	Estimated Cost
Urban migrant populations are at high risk for leprosy	Diagnose and treat hidden cases in high-risk populations	Do targeted programming in urban areas	5.63
There are too few staff available to provide leprosy diagnosis treatment and care in urban areas		Deploy urban ASHAs	
		Build the capacity of existing health personnel in high-risk areas	
		Conduct camps in high-risk areas	

SECTION 3

NEXT STEPS

NEXT STEPS

This report provides wide-ranging recommendations for increasing coverage of health services in Haryana, so the whole population is covered. It includes overviews of priority interventions to strengthen both the health system overall as well as specific programs. It is likely, however, that not all solutions can be implemented at once, or even over the next five years. Further work is required to prioritize interventions, identify costs, advocate for the plan, and provide oversight and support. As an important first step, a steering committee needs to be appointed to oversee all efforts. Next steps are identified below and in Table 34:

1. **Appoint a UHC steering committee**

   The chief minister's office can appoint a steering committee that includes key officials from NHM, Haryana State Health Resource Center, and the Directorate of Health Services.

2. **Decide which interventions to prioritize and adopt**

   This includes two steps: finalizing the contents of the essential package of care and prioritizing the intervention options (outlined in this document) that would most efficiently make this package available to all. Priorities can be organized in the following manner:

   - Adopted as a priority
   - Implemented after some time
   - Put on hold for the time being

3. **Conduct a more rigorous costing**

   Once there is consensus around a set of priority interventions to achieve UHC, a more rigorous costing exercise needs to be conducted.

4. **Obtain broad stakeholder support**

   HC is a goal prioritized at national and state levels, and yet reservations exist throughout the health system. All concerns should be addressed, and a common vision needs to be created to make the health system work for everyone.

5. **Develop step-wise implementation plans and monitoring frameworks**

   Implementation plans need to be developed with lines of accountability for quality execution. Monitoring plans with key indicators need to be developed to support oversight efforts and problem solving.

6. **Provide oversight and support**

   The steering committee needs to provide oversight and support to the successful implementation of the UHC plans. This may include conducting site visits, commissioning operations research, and problem solving.

TABLE 31: WAY FORWARD TO IMPLEMENT UHC

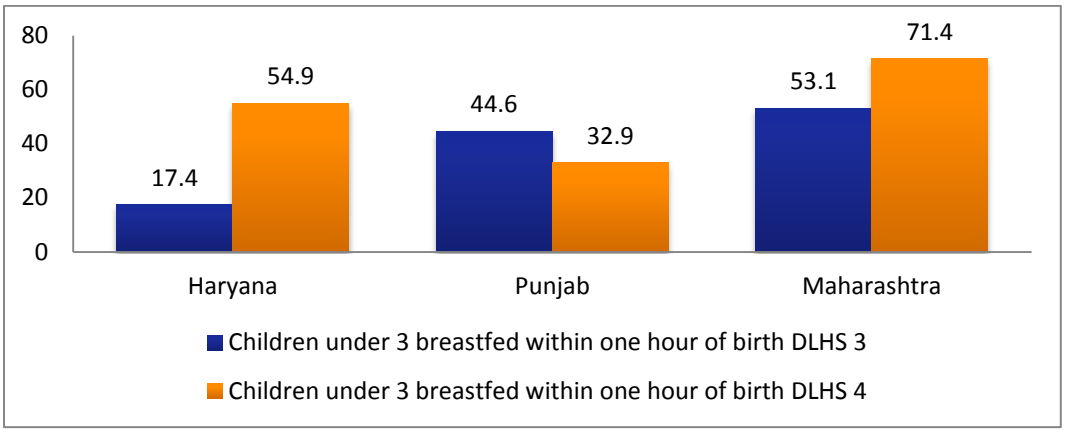
Step	Who to lead	When?
Put together a UHC steering committee	Department of Health and Family Welfare, NHM	Q1 2015
Decide which interventions to prioritize and adopt	Steering committee	Q1 2015
Conduct a more rigorous costing	Research partners	Q2 2015
Get broad stakeholder support	Steering committee	Q2 2015 (and ongoing)
Develop step-wise implementation plans	Steering committee	Q2 2015
Provide oversight and support	Steering committee	Ongoing

SECTION 4

ANNEXES

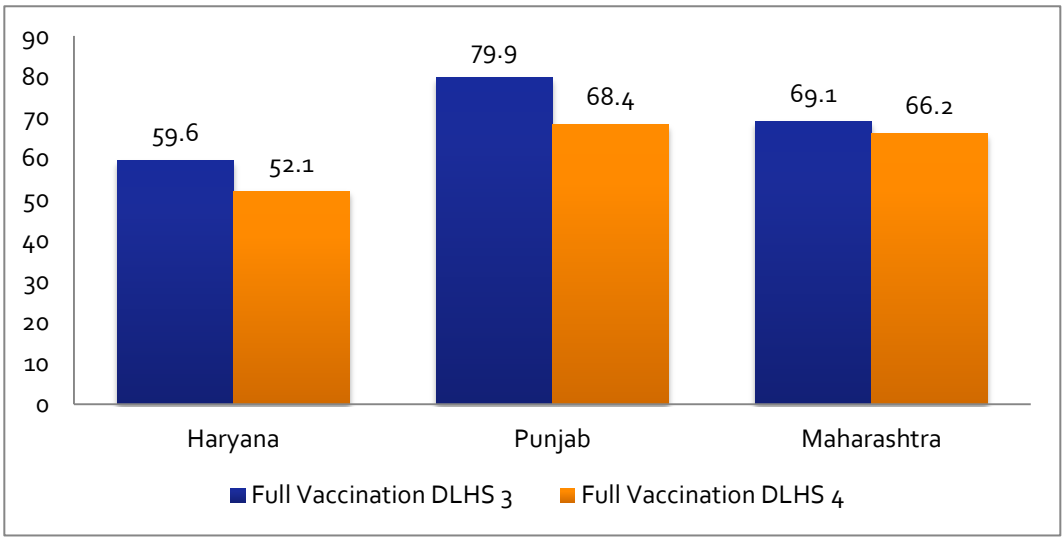
SECTION II APPENDIX

FIGURE CA-1. 0- BREAST FEEDING



Data source: DLHS 3 and 4

FIGURE CA-2. 0 VACCINATION RATES IN HARYANA, PUNJAB, AND MAHARASHTRA



ANNEX A: HEALTH FINANCING

FIGURE A-1: TOTAL PUBLIC HEALTH EXPENDITURE IN HARYANA AS A % OF GSDP

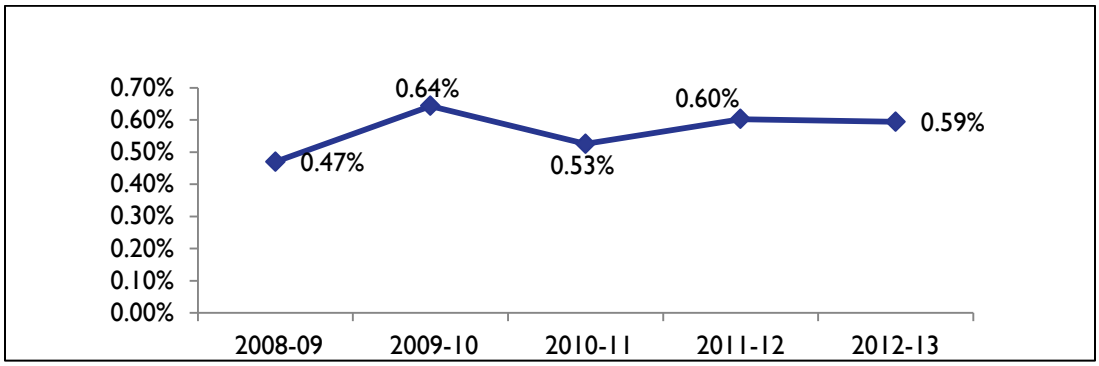


TABLE A-1: PROJECTED ESTIMATES FOR VARIOUS THEMATIC AREAS FOR UHC

	2015/16			2016/17			2017/18			2018/19			2019/20		
Estimated Amount (crores)															
Strategies	**Capex**	**Opex**	**Total**	**Capex**	**Opex**	**Total**	**Capex**	**Opex**	**Total**	**Capex**	**Opex**	**Total**	**Capex**	**Opex**	**Total**
Infectious Diseases	6.1	4.32	10	0	2	2	0	2	2	0	2	2	0	2	2
NCD	6.81	4.04	10.85	-	4.69	4.69	-	5.04	5.04	-	5.41	5.41	-	5.82	5.82
RMNCH+A	3.13	92.87	96	-	102	102	-	111.01	111.01	-	121.5	121.5	-	132.5	132.5
Nutrition	0.1	52.09	52.19	-	56.26	56.26	-	60.76	60.76	-	65.62	65.62	-	71	71
Access to Medicine & Diagnostics	-	356.4	356.4	-	385	385	-	416.6	416.6	-	450.8	450.8	-	487.7	487.7
HRH	1.43	124.31	125.74	-	60	60	-	17.65	17.65	-	19.58	19.58	-	24	24
HMIS	30.22	11.03	41.25	-	12	12	-	12.87	12.87	-	14	14	-	15.41	15.41
BCC	-	1.37	1.37	-	0.5	0.5	-	0.33	0.33	-	0.5	0.5	-	0.35	0.35
Research	5	2	7	-	3	3	-	2.89	2.89	-	3	3	-	2.91	2.91
Quality & Health Infrastructure	145	29.46	174.46	157.67	63.52	221.19	235.64	95.67	331.31	255	132.16	387.16	2.79	140.59	143.38
Total Amount	197.95	677.91	875.44	157.67	689.01	846.68	235.64	724.86	960.5	255	814.61	1069.61	2.79	882.31	885.1

TABLE A-2: HARYANA-BASED COMPANIES WITH POTENTIAL FOR CSR

Manufacturing	
Districts	Faridabad, Yamuna Nagar, Bahadurgarh, Hissar, Ambala, Rohtak
Companies present	Orient Paper & Industries, JCB India Limited, Agri Machinery Group (Escorts Limited), India Yamaha Motor Pvt. Ltd., ABB Group, BILT, HPGCL thermal power plant, Indian Oil Corporation and a National Thermal Power Corporation power plant, Jindals, Hindustan National Glass, MarutiUdyog Limited, Hero, Alcatel, Sony, Whirlpool India, Bharti Telecom, Liberty Shoes, HMT, National Fertilizers Limited plant, Asian Paints and Suzuki Motors. Haryana does large production of cars, motorcycles, tractors, sanitary ware, glass containers, gas stoves, and scientific instruments. It has the Asia's largest paper mill, sugar mill, and timber industry and India's largest railway workshop. The state also boasts of revenue from 80,000 small-scale industrial units and thousands of medium and small-scale units.
Service Industry	
Districts	Faridabad and Gurgaon
Companies present	Several large international companies have their Indian headquarters or branch offices and contact centers in Faridabad and Gurgaon, including Damco Solutions, Abacus Softech, Nokia Solutions Networks, Mitsubishi Electric, General Electric, IBM, Huawei, Tata Consultancy Services, Amdocs Ltd., Khetan, IBM, Hewitt Associates, Dell, Convergys, United Healthcare and NIIT.

Annex A-1: Experiences of Karnataka and Tamil Nadu with World Bank funding

The World Bank supported Karnataka Health System Development and Reforms Project, which started in 2006 with an estimated cost of US$206.48 million [78] (Rs. 1,239 crore [79]) of which the bank has committed US$141.83 million (Rs. 851 crore). The project has proven effective in building capacities and systems to improve state and central government spending on health.[80] As per the health facility survey (2011) conducted by the project, 83 percent of PHCs had a doctor present at the time of the survey, compared to only 35 percent in 2004; in 2011, 89 percent of PHCs had a functional labor room, compared to 67 percent in 2004. The survey also showed that over 1,000 PHCs across the state function 24 hours a day. The project has also strengthened health financing initiatives of Karnataka by purchasing hospital services for poor beneficiaries – as of September 2012, 19,000 patients had received services that were otherwise difficult to access.

Similarly, Tamil Nadu used World Bank soft loans for financing secondary care for the disadvantaged and poor. The TNHS project was started in 2004 with US$212.8 million [81] (Rs. 1,277 crore) in total funding. As of 30 June 2014, the project has disbursed 89.6 percent of the committed amount. It has been significant in reducing IMR from 43/1,000 live births in 2005, to 22/1,000 live births in 2012 (SRS, India Census).

[78] http://www.worldbank.org/projects/P071160/karnataka-health-systems?lang=en 19 October, 2014

791 US$ equals to Rs. 60.

80http://www.worldbank.org/en/news/press-release/2012/09/27/70-million-karnataka-health-system-development-reform-project-india-over-1000-public-health-facilities-rural-areas-are-open-24-hours-day accessed on 19 October, 2014

81http://www.worldbank.org/en/news/feature/2014/07/21/tamil-nadu-health-system-project

ANNEX B: ESSENTIAL PACKAGE OF CARE

Methodology

The unit costs have been calculated based on the Standard Treatment Guidelines, whereby major inputs have been considered, human resources, cost of equipment, cost of laboratory diagnostics and cost of drugs. The basis of all costs is information provided by clinicians / experts in different clinical specialties on time taken to deliver specific services, which were adopted by the Armed Forces Medical College, Pune, and National Commission on Macroeconomics and Health.

Costs

Human resources: This cost was estimated based on time of health care providers required to manage a case. Since there is a spectrum of severity of illness, the lower limit of time provided by clinicians was taken for estimating human resource costs.[82] For estimating the human resource costs, the entry-level pay scales in Haryana were used. The gross salary was obtained as the ceiling. 24 working days per month and 6 hours of work per day were used to estimate the manpower cost per minute. Provider salaries for different categories were apportioned as per the time recommended by clinicians for managing a case.

Cost of equipment: The cost of different items was obtained from the market. There is a wide range in rates and specifications for the same items. In most cases, the opinion of clinicians was used.[83] Similar information on costs, maintenance, and life of equipment was obtained from other institutions of repute. The cost of equipment was depreciated accordingly and annual costs apportioned to one case to arrive at unit cost of equipment. The cost of equipment for specific clinical specialties was apportioned to management of a case of a disease. The cost of equipment that was used by many departments was not apportioned here, and was included as part of systems costs.

Cost of laboratory investigations: The costs of laboratory investigations charged by Medical College Hospital and other major teaching hospitals were taken into consideration for costing.

Cost of medicines: The treatment regimen (drug, dosage, and duration) provided by clinicians was taken into consideration for arriving at the cost of drugs. This was based on the bare minimum required for managing a case of a particular disease / health condition. The tender rates of Haryana Drug Supply Dept. were incorporated (if they were available for the particular drug).

System Costs: The salaries of ward boys, sweepers, clerks, and administrative staff were taken into account for managing a case. The costs of building, equipment for general use (not been included in the costs of managing a case of diseases / health conditions) and salary of staff were included as systems costs available from other studies. The systems cost were estimated separately for OPD (at all levels), IPD (at PHC, CHC, and District Hospital) and Operation Theater (at PHC for Family Planning camps), CHC, and District Hospital). Systems costs were estimated per case for OPD, per inpatient day for IPD, and per operation for OT.

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[82] For example, to manage a case of birth asphyxia at a CHC, the clinician suggested inpatient treatment for 1-2 days, specialist's time of 1 hr / day and nurses' time of 2 hr / day. Taking the lower limit of inpatient management, i.e., 1 day, it was estimated that a specialist would spend 1 x 60 = 60 min and a nurse would spend 1 x 120 = 120 min per case. Similarly, to manage a low birth weight baby of 1500-1800 g at a CHC, the clinician suggested inpatient care for 3-5 days and a specialist's time of ½ hr; the manpower time of specialist was taken as 3 x ½ hr = 90 min.

[83] For example, a labor table is available for Rs. 3500 (enamel coated), Rs. 10000 (stainless steel) and Rs. 150000 (with advanced features). The clinician recommended we take the cost of stainless steel labor table because of its intermediate cost and longer life.

In addition to attending to patients, medical (doctors) and paramedical staff (nurses, ANMs, etc.) are also involved in administrative work. Twenty-five percent of salaries of doctors and 50 percent of salaries of paramedical staff were apportioned to administrative work and included in the systems costs.

The systems costs thus derived were then added to care of individual cases based on number of OPD visits, or number of days of inpatient stay, etc. to arrive at the total cost of managing a case of a disease / health condition.

TABLE B-1: PROPOSED LIST OF SERVICES BY LEVEL OF CARE

Community Health Centres	Primary Health Centres
Acute respiratory infections: Severe pneumonia	Acute Respiratory Infections : Pneumonia
Diarrhoea: With severe dehydration	Diarrhoea: With some dehydration
Diabetes Without insulin	Dysentery
Diabetes With insulin	Worm infestation
Hypertension with diet and exercise	Immunization
Hypertension with one drug	Treatment of anaemia
Hypertension with two drugs	Malaria: P. vivax and P. ovale
Costing of cardiovascular diseases, hypertension	Normal delivery
Blindness due to refractive errors & Low Vision	Family Planning services
Tonsils, sinus, and nasal fractures (Initial Medical Management)	Birth asphyxia
Paucibacillary leprosy	Neonatal sepsis
Multibacillary leprosy	Low birth weight (1800-2500g)
TB: New sputum positive	Malnutrition
TB: New sputum negative	Puerperal sepsis
Treatment after default / Retreatment / Failure	Safe abortion* and septic abortion
Extrapulmonary TB	Eclampsia
Malaria: P. falciparum	Premature rupture of membranes
Japanese encephalitis	Menstrual disorder
Lymphatic filariasis	Chronic Obstructive Pulmonary Disease
Poisoning	Acute asthma
Snake bites	Cataract blindness
Identification, counselling, and treatments for domestic violence and sexual violence	Chronic otitis media
	Malaria:Complicated
	Burns
	Cholera + Jaundice + Typhoid
District Hospital	
Low birth weight (Between 1500-1800g)	HIV COMPLICATIONS
Antepartum haemorrhage	COSTING OF HIV PREVENTIVE(PPTCT)

Community Health Centres	Primary Health Centres
Postpartum haemorrhage	Without Hospitalization Schizophrenia
Obstructed labour	With hospitalization of 10 days in 5%_schizophrenia
Diabetes complication	Mood / Bipolar disorders
Acute hypertensive stroke	Without hospitalization mood
CVD-coronary artery disease	With hospitalization of 10 Days in 5%_mood
CVD- Incident cases	Common mental disorders
Prevalent cases	Alcohol and drug abuse
Rheumatic heart disease	Without hospitalization alcohol
Congestive heart failure	With Hospitalization of 10 Days in 50%_Alchohol
Breast cancer	Child and adolescent psychiatric disorders
Cancer of cervix	Mental Retardation
Lung cancer	Without hospitalization MR
Stomach cancer	With hospitalization of 10 days in 5%_MR
Eyes surgery	Geriatric problems including dementia
i) Hearing aid, neurologic	Epilepsy
ii) Hearing aid, neurologic in 25% cases required ear mould	Dental caries
Surgical management of ENT conditions	Periodontal diseases
Leprosy with deformities	Dentofacial anomalies and malocclusion
Dengue fever	Dental fluorosis
Dengue hemorrhagic fever	Dental surgery
Hepatitis B	Road traffic injuries
Costing of HIV infection / AIDS	Dialysis

* Safe abortion is not covered in the costing

ANNEX C: ACCESS TO MEDICINES

TABLE C-1: PER CAPITA OOP EXPENDITURE ON HEALTH CARE AND MEDICINES IN STUDY STATES (RS.)

	PC OOP on medicines			PC OOP on health			Share of medicine in OOP (%)
State	1993-94	2004/05	2011/12	1993-94	2004/05	2011/12	
Haryana	19.7	36.3	79.6	22.0	51.7	107.76	74
Jammu & Kashmir	15.8	19.1	65.6	16.8	22.8	85.70	76.5
Karnataka	9.6	18.8	69.1	14.1	28.8	113.36	61
Kerala	17.6	67.2	156.5	22.6	107.2	251.19	62.3
Punjab	23.2	43.2	145.4	25.3	64.0	192.54	75.5
Rajasthan	13.4	29.0	71.6	15.5	34.9	95.27	75.2
Tamil Nadu	10.3	29.1	79.8	15.2	43.8	141.14	56.6
Uttar Pradesh	16.5	38.2	81.8	17.9	46.7	111.31	73.5
All India	12.7	29.8	73.9	15.5	41.8	111.2	66.4

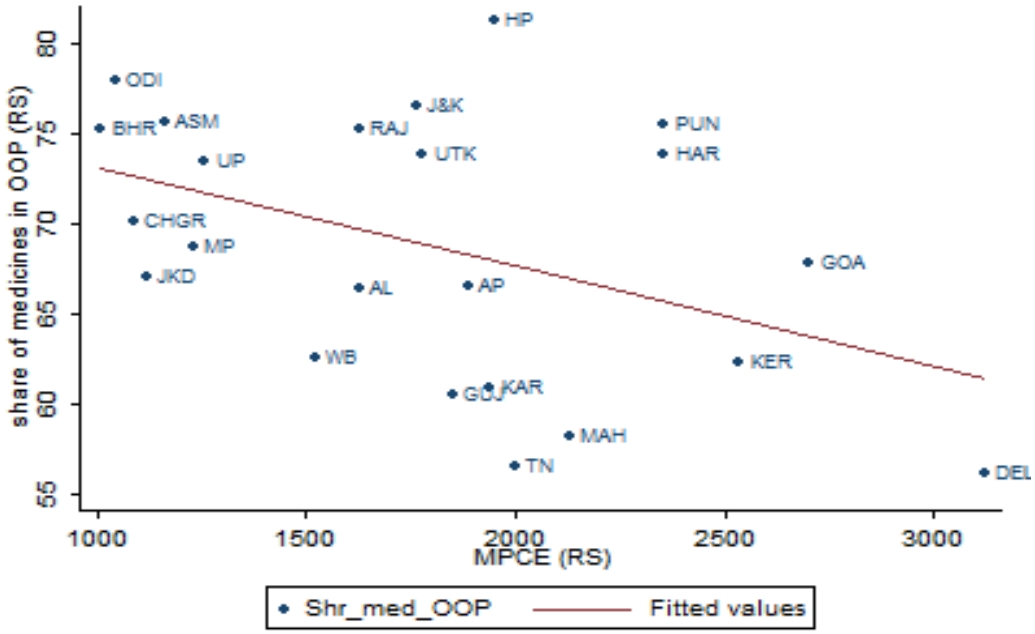
Source: PHFI calculation based on NSSO consumer expenditure survey, various rounds

TABLE C-2: PUBLIC SPENDING ON MEDICINES IN HARYANA

Rs. crores	Year	2009/10	2010/11	2011/12	2012/13	2013/14
Medicine budget	State	11.77	10.3	20	26	32
	NRHM	14.48	20.25	15	23.14	37.12
	Total Medicines	26.25	30.55	35	49.14	69.12
Total spending (state +NRHM)		1356.7	1290.17	1680.07	1697.46	2,301.29
Drug as % of total spending		1.9	2.4	2.1	2.9	3.0

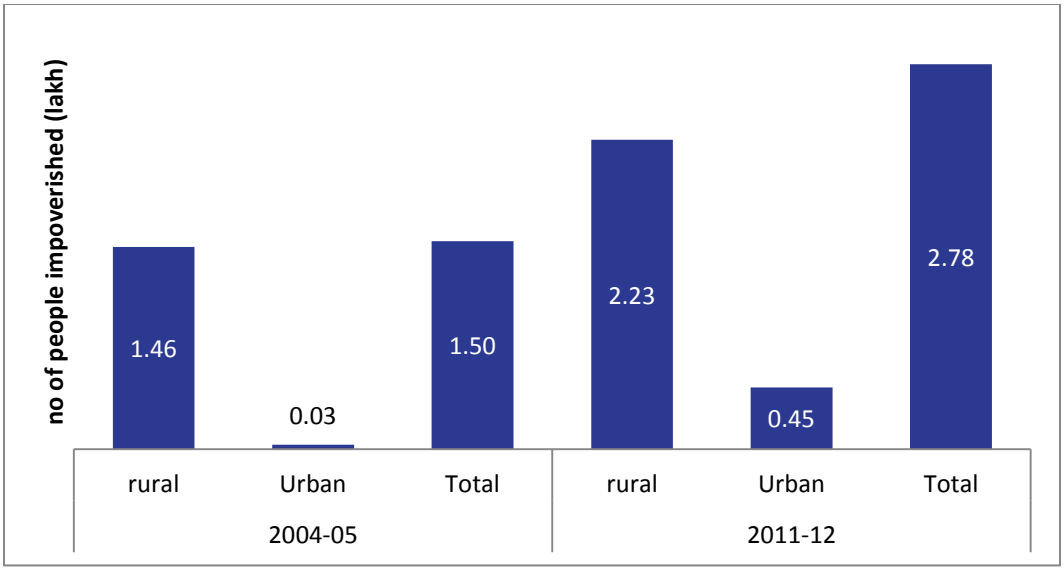
Source: Detailed demand for grants various years, Haryana State Budget; NRHM FMR, Haryana, various years

FIGURE C-1: SHARE OF MEDICINES IN HOUSEHOLD OOP EXPENDITURE AND MONTHLY PER CAPITA EXPENDITURE: MAJOR STATES



Source: Authors' calculation based on NSSO, CES 2011/12 unit records

FIGURE C-2: NO. OF PEOPLE (LAKHS) IMPOVERISHED DUE TO OOP SPENDING ON MEDICINES, 2004/05–2011/12



Source: Authors' calculation based on NSSO, CES 2011/12 and 2004/05 unit records

TABLE C-3: PROPOSED LIST OF MEDICINES BY LEVEL OF CARE

Sub-centre (30 medicines)					
Name of Drug	**ATC code (at lowest level)**	**Usage**	**Name of Drug**	**ATC code (at lowest level)**	**Usage**
Ciprofloxacin Eye Drops 0.30%	S01AE03	OPD	Primaquine Tablets 7.5 mg	P01BA03	OPD
Diclofenac Sodium Injection 25 mg/ml	M01AB05	OT, IR, IPD	Povidone Iodine ointment 5%	D08AG02	OPD, IR
Diclofenac Sodium Tablets 50 mg	M01AB05	OPD	Povidone Iodine solution 5%	D08AG02	OT, IR, IPD
Paracetamol Drops 150 mg/ml	N02BE01	OPD	Gentian Violet Solution 1%	D01AE02	IR, IPD
Paracetamol Syrup 125 mg/5ml	N02BE01	OPD	Dicyclomine Tablets 10 mg	A03AA07	OPD
Paracetamol Tablets 500 mg	N02BE01	OPD	Domperidone Tablets 10 mg	A03FA03	OPD
Cetirizine Tablets 10 mg	R06AE07	OPD	ORS Powder	A07CA	OPD
Albendazole Tablets 400 mg	P02CA03	OPD	Methylergometrine Tablets 0.125 mg	G02AB01	OPD
Chloroquine Phosphate Tablets 250mg (≡155 mg of Chloroquine base) 250 mg	P01BA01	OPD	Ferrous Sulphate and Folic Acid Tablets 100 mg + 0.5 mg	B03AD	OPD
Co-trimoxazole Tablets 40mg + 200mg	J01EA01	OPD	Ferrous Sulphate with Folic Acid Tab.(Paediatric) 20 mg + 0.1 mg	B03AD	OPD
Co-trimoxazole Tablets 80mg + 400mg	J01EA01	OPD	Folic Acid Tablets IP 5 mg 5 mg	B03BB01	OPD
Metronidazole Tablets 200 mg	P01AB01	OPD	Vitamin – B complex tablet NFI (prophylactic)	A11EX	OPD
Metronidazole Tablets 400 mg	J01XD01	OPD	Co-trimoxazole Tablets [Trimethoprim + Sulphamethoxazole] 20 mg + 100mg	J01EA01	OPD
Primaquine Tablets 2.5 mg	P01BA03	OPD	Surgical Spirit BP	D08AX05/08	OT, IR, IPD

Primary Health Centre (192)					
Name of Drug	**ATC code (at lowest level)**	**Usage**	**Name of Drug**	**ATC code (at lowest level)**	**Usage**
Atropine Sulphate Injection 0.6 mg/ml	A03BA01	OT, IPD	Diethylcarbamazine Tablets 100 mg	P02CB02	OPD
Drotaverine Hydrochloride Injection 40 mg/2ml	A03AD02	IPD	Doxycycline Capsules 100 mg	J01AA02	OPD
Lignocaine Ointment 5%	D04AB01	OPD, IPD	Erythromycin Estolate Oral Suspension 125 mg/ 5ml	J01FA01	OPD
Lignocaine Gel 2%	D04AB01	OPD, IPD	Erythromycin Stearate Tablets 250 mg	J01FA01	OPD
Aspirin Tablets 300 mg	N02BA01	OPD	Gentamycin Injection 80 mg/2ml	J01GB03	IR, IPD
Ibuprofen and Paracetamol Tablets 400 mg + 325 mg	M01AE51	OPD	Metronidazole Injection 500 mg/ 100ml	P01AB01	IPD
Ibuprofen Tablets 200 mg	M01AE01	OPD	Metronidazole Benzoate Oral Suspension 100 mg/ 5ml	P01AB01	OPD
Ibuprofen Tablets 400 mg	M01AE01	OPD	Norfloxacin Tablets 400 mg	J01MA06	OPD
Paracetamol Injection 150 mg/ml	N02BE01	IR, IPD	Phenoxymethylpenicillin Potassium Tablets 125 mg	J01CE02	OPD
Adrenaline Injection 1 mg/ml	C01CA24	OT, IR, IPD	Phenoxymethylpenicillin Potassium Tablets 250 mg	J01CE02	OPD
Betamethasone Tablets 0.5 mg	H02AB01	OPD	Procaine Penicillin with Benzylpenicillin Injection 3 + 1 Lac units	J01CE09	IR, IPD
Chlorpheniramine Maleate Tablets 4 mg	R06AB04	OPD	Quinine Dihydrochloride Injection 300 mg/ml	P01BC01	IR, IPD
Dexamethasone Injection 8 mg/2ml	H02AB02	OT, IR, IPD	Quinine Sulphate Tablets 300 mg	P01BC01	OPD
Dexamethasone Tablets 0.5 mg	H02AB02	OPD	Amlodipine Tablets IP 2.5 mg 2.5 mg	C08CA01	OPD
Hydrocortisone Sod. Succinate Injection 100 mg base / vial	H02AB09	OT, IR, IPD	Amlodipine Tablets 5 mg	C08CA01	OPD
Hydroxyzine Tablets 25 mg	N05BB01	OPD	Atenolol Tablets 50 mg	C07AB03	OPD
Pheniramine Injection 22.75 mg/ml	R06AB05	IR, IPD	Dobutamine Injection 50 mg/ml	C01CA07	OT, IPD
Pheniramine Maleate Syrup 15 mg/5ml	R06AB04	OPD	Dopamine Hydrochloride Injection 40 mg/ml	C01CA04	OT, IPD

Primary Health Centre (192)					
Name of Drug	**ATC code (at lowest level)**	**Usage**	**Name of Drug**	**ATC code (at lowest level)**	**Usage**
Prednisolone Tablets 5 mg	H02AB06	OPD	Enalapril Maleate Tablets 5 mg	C09AA02	OPD
Promethazine Syrup 5 mg/ 5ml	R06AD02	OPD	Enalapril Maleate Tablets 2.5 mg	C09AA02	OPD
Promethazine Injection 25 mg/ml	R06AD02	IR, IPD	Glyceryl Trinitrate Tablets 0.5 mg	C01DA02	OPD
Promethazine Tablets 25 mg	R06AD02	OPD	Isosorbide dinitrate Tablets 5 mg	C01DA08	OPD
Pralidoxime Chloride Injection 25 mg/ml	V03AB04	IPD	Nitroglycerin Injection 5 mg/ml	C01DA02	IPD
Carbamazepine Tablets 100 mg	N03AF01	OPD	Propranolol Tablets 40 mg	C07AA05	OPD
Phenobarbitone Tablets 30 mg	N03AA02	OPD	Calamine Lotion IP	D02AX	OPD
Phenytoin Injection 50 mg/ml	N03AB02	IPD	Cetrimide Cream IP 0.50%	D08AJ04	OPD
Sodium Valproate Tablets 200 mg	N03AG01	OPD	Fusidic Acid Cream 2%	D06AX01	OPD
Albendazole Oral suspension 400 mg/ 10ml	P02CA03	OPD	Glycerin IP	A06AX01	IPD
Amoxycillin Capsules 250 mg	J01CA04	OPD	Liquid Paraffin IP	A06AA01	IPD
Amoxycillin Capsules 500 mg	J01CA04	OPD	Ointment containing : Lidocaine 3%, Zinc oxide 5%, Hydrocortisone 0.25%, Allantoin 0.5%	D07X	OPD
Amoxycillin Trihydrate Dispersible Tablets 125 mg	J01CA04	OPD	Miconazole Nitrate Cream 2%	D01AC02	OPD
Ampicillin Injection 500 mg	J01CA01	IPD	Powder Neomycin, Bacitracin with Sulphacetamide 5mg + 250units + 60mg	D06AX	OPD
Benzathine Benzylpenicillin Injection 12 Lac units	J01CE08	IR, IPD	Silver Sulphadiazine cream 1%	D06BA01	OPD
Benzathine Benzylpenicillin Injection 6 Lac units	J01CE08	IR, IPD	Anti A Blood Grouping Serum (Anti A Monoclonal Serum IP)	V07AZ	Lab
Benzyl Penicillin Injection (600 mg Benzylpenicillin) 10 Lac units	J01CE01	IR, IPD	Anti B Blood Grouping Serum	V07AZ	Lab
Cephalexin Capsules 250 mg	J01DB01	OPD	Anti DRH Blood Grouping Serum	V07AZ	Lab
Cephalexin Capsules 500 mg	J01DB01	OPD	Diagnostic Sticks for Urine Sugar	V07AY	Lab

Primary Health Centre (192)					
Name of Drug	**ATC code (at lowest level)**	**Usage**	**Name of Drug**	**ATC code (at lowest level)**	**Usage**
Chloroquine Phosphate Injection 40 mg/ml	P01BA01	IR, IPD	VDRL Antigen (with +ve and -ve control) / RPR Slide Kit	V04CX	Lab
Ciprofloxacin Injection 200 mg/ 100 ml	J01MA02	IPD	Compound Benzoin Tincture	D08A	IR, IPD
Ciprofloxacin Tablets 250 mg	J01MA02	OPD	Formaldehyde solution	V07AV	OT
Ciprofloxacin Tablets 500 mg	J01MA02	OPD	Hydrogen Peroxide Solution 6%	D08AX01	OT, IR, IPD
Clotrimazole Cream 2%	D01AC01	OPD	Lysol (Cresol with Soap Solution) (Cresol 50% + Soap 50%)	D08AE03	OT, IPD
Compound Benzoic Acid Ointment IP Benzoic Acid 6%+ Salicylic Acid 3% 6% + 3%	D01AE20	OPD	Povidone Iodine Scrub Solution / cleansing solution 7.5% w/v Povidone Iodine 7.5%	D08AG02	OPD
Co-trimoxazole Oral suspension 40mg + 200mg per 5ml	J01EA02	OPD	Frusemide Tablets 40 mg	C03CA01	OPD
Furosemide Injection 10 mg/ml	C03CA01	OT, IR, IPD	Diazepam Tablets 5 mg	N05BA01	OPD
Hydrochlorthiazide Tablets 12.5 mg	C03AA03	OPD	Haloperidol Injection 5 mg/ml	N05AD01	IPD
Antacid Liquid	A02AF02	OPD	Imipramine Tablets 25 mg	N06AA02	OPD
Bisacodyl Tablets 5 mg	A06AB02	OPD	Imipramine Tablets 75 mg	N06AA02	OPD
Dicyclomine Injection 10 mg/ml	A03AA08	IR, IPD	Aminophylline Injection 25 mg/ml	R03DA05	OT, IR, IPD
Dicyclomine Hydrochloride Oral Solution 10 mg/5ml	A03AA07	OPD	Cough Syrup [Each 5ml contains Chloropheniramine Maleate 3mg Ammonium Chloride 130mg, Sodium Citrate 65 mg, Menthol 0.5 mg]	R05X	OPD
Domperidone Suspension 5 mg/ 5ml	A03FA03	OPD	Salbutamol Tablets 4 mg	R03CC02	OPD
Hyoscine Butylbromide Injection 20 mg/ml	A03BB01	IR, IPD	Salbutamol Nebuliser Solution 5 mg/ml	R03AC02	IR, IPD
Loperamide Tablets 2 mg	A07DA03	OPD	Salbutamol Tablets 2 mg	R03CC02	OPD
Metoclopramide Injection 10 mg/2ml	A03FA01	IR, IPD	Theophylline and Etofylline Injection 50.6mg + 169.4mg	R03DA54	IR, IPD
Metoclopramide Tablets 10 mg	A03FA01	OPD	Theophylline and Etofylline Tablets 23mg + 77mg	R03DA54	OPD

Primary Health Centre (192)					
Name of Drug	**ATC code (at lowest level)**	**Usage**	**Name of Drug**	**ATC code (at lowest level)**	**Usage**
Omeprazole Capsules 20 mg	A02BC01	OPD	Compound Sodium Lactate Injection	B05BB01	OT, IPD
Ranitidine HCL Injection 50 mg/2ml	A02BA02	IR, IPD	Dextrose Injection 25%	B05BA03	OT, IPD
Ranitidine Tablets 150 mg	A02BA02	OPD	Dextrose Injection 10%	B05BA03	OT, IPD
Sodium Phosphates Enema BP	A06AD17	IPD	Dextrose Injection 5%	B05BA03	OT, IPD
Biphasic Isophane Insulin Injection 30 /70 (30% Soluble Insulin & 70% Isophane Insulin) 40 IU / ml	A10AD	OPD, OT, IPD	Multiple Electrolytes & Dextrose Injection Type I IP (Electrolyte 'P' Injection)	B05BB02	OT, IPD
Glibenclamide Tablets 5 mg	A10BB01	OPD	Sodium Chloride and Dextrose Injection 0.9 % + 5 %	B05BA02	OT, IPD
Gliclazide Tablets 40 mg	A10BB09	OPD	Sodium Chloride Injection	B05XA03	OT, IPD
Glimepiride Tablets 2 mg	A10BB12	OPD	Ascorbic Acid Tablets 500 mg	A11GA01	OPD
Glimepiride Tablets 1 mg	A10BB12	OPD	Multivitamin Drops	A11BA	OPD
Glipizide Tablets 5 mg	A10BB07	OPD	Multivitamin Tablets	A11BA	OPD
Isophane Insulin Injection 40 IU / ml	A10AC	OPD	Vitamin B Complex Injection NFI	A11EA	IPD
Metformin Tablets 500 mg	A10BA02	OPD	Vitamin –A Capsules 2 Lac units	A11CA01	OPD
Soluble Insulin Injection 40 IU / ml	A10AB	OPD, OT, IPD	Sodium Bicarbonate Injection 7.5%	B05XA02	OT, IPD
Rabies Vaccine Human (Cell Culture) (Intradermal) 2.5 IU 2.5 IU	J07BG01	IPD	Water for Injection IP	V07AB	OT, IR, IPD
Rabies Vaccine Human (Cell Culture) (Intramuscular) 2.5 IU/ dose 2.5 IU	J07BG01	IPD	Rabies Antiserum IP (Equine) (I.M./SC use) 300 units / ml	J06BB05	IR, IPD
Snake Venum Anti Serum (Polyvalent Anti Snake Venum)	J06AA03	IPD	Vitamin A Solution 1 Lac IU/ml	A11CA01	OPD
Tetanus Vaccine (adsorbed) IP	J07AM01	IR, IPD	Labetalol Tablets 100 mg	C07AG01	OPD
Ciprofloxacin Ophthalmic Ointment 0.30%	S01AE03	OPD	Labetalol Hydrochloride Injection 20 mg/ 4ml	C07AG01	IPD
Sulfacetamide Eye drops 20%	S01AB04	OPD	Ampicillin Capsules 500 mg	J01CA01	OPD

Primary Health Centre (192)					
Name of Drug	**ATC code (at lowest level)**	**Usage**	**Name of Drug**	**ATC code (at lowest level)**	**Usage**
Methylergometrine Injection 0.2 mg/ml	G02AB01	OT, IPD	Nitrofurantoin Tablets 100 mg	J01XE01	OPD
Oxytocin Injection 5 IU/ml	H01BB02	OT, IPD	Cephalexin Oral Suspension (Cephalexin Dry Syrup) 125 mg/ 5ml	J01DB01	OPD
Alprazolam Tablets 0.25 mg	N05BA12	OPD	Salbutamol Syrup 2 mg/5ml	R03CC02	OPD
Alprazolam Tablets 0.5 mg	N05BA12	OPD	Ranitidine Tablets 300 mg	A02BA02	OPD
Amitriptyline Tablets 25 mg	N06AA09	OPD	Famotidine Tablets 20 mg	A02BA03	OPD
Chlorpromazine Tablets 25 mg	N05AA01	OPD	Famotidine Tablets 40 mg	A02BA03	OPD
Chlorpromazine Tablets 50 mg	N05AA01	OPD	Dicyclomine Hydrochloride and Activated Dimethicone suspension 10mg + 40mg per ml	A03ED	OPD
Diazepam Injection 10 mg/ 2ml	N05BA01	OT, IPD	Dicyclomine and Paracetamol Tablets 20mg + 325mg	A03EA	OPD
Dextromethorphan Hydrobromide Syrup 13.5mg/ 5ml	R05DA09	OPD	Povidone Iodine solution 5%	D08AG02	OT, IR, IPD
Calcium & Vitamin D3 Suspension 250mg + 125 IU	A12AX	OPD	Atenolol Tablets 25 mg	C07AB03	OPD
Saline Nasal Solution (Drops) 0.65%	R01AX10	OPD	Enalapril Maleate Tablets 10 mg	C09AA02	OPD
Aspirin Delayed Release Tablets (enteric coated) 75 mg	B01AC06	OPD	Cephalexin Tablets (DT) 125 mg	J01DB01	OPD
Beclomethasone, Neomycin and Clotrimazole Cream 0.025% + 0.5% + 1%	D07CC04	OPD	Metoclopramide Syrup 5 mg/ 5ml	A03FA01	OPD
Gamma Benzene Hexachloride Lotion (Lindane lotion USP) 1%	P03AB02	OPD	Sodium Valproate Oral Solution 200 mg/ 5ml	N03AG01	OPD
Iron and Folic acid Syrup 100 mg + 0.5 mg per 5 ml	B03AD	OPD	Diclofenac Sodium and Paracetamol Tablets 50 + 325 mg	M01AB05	OPD

Community Health Centre (140 medicines)					
Name of Drug	**ATC code (at lowest level)**	**Usage**	**Name of Drug**	**ATC code (at lowest level)**	**Usage**
Halothane	N01AB01	OT	Human Anti D Immunoglobulin Injection 50 mcg	J06BB01	OT, IPD
Ketamine Injection 50 mg/ml	N01AX03	OT	Human Anti D Immunoglobulin Injection (IM use) 300 mcg	J06BB01	OT, IPD
Lignocaine and Adrenaline Injection 20mg + 0.01mg	N01BB52	OT	Human Anti D Immunoglobulin 150 mcg	J06BB01	OT, IPD
Lignocaine Injection 2%	N01BB02	OT, IR, IPD	Neostigmine Injection 0.5 mg/ml	N07AA01	OT, IPD
Thiopentone Injection 0.5 g	N01AF03	OT	Neostigmine Injection 2.5 mg/ml	N07AA01	OT, IPD
Pentazocine Injection 30 mg/ml	N02AD01	IR, IPD	Succinylcholine Injection 50 mg/ml	M03AB01	OT, IPD
Tramadol Capsules 50 mg	N02AX02	OPD	Atropine Eye Ointment 1%	S01FA01	IPD
Tramadol Injection 50 mg/ml	N02AX02	IR, IPD	Atropine Sulphate Ophthalmic Solution 1%	S01FA01	IPD
Methyl Prednisolone Sodium Succinate for Injection 500 mg	H02AB04	OT, IPD	Chloramphenicol Eye Drops 0.05%	S01AA01	OPD
Naloxone Injection 0.4 mg/ml	V03AB15	IPD	Hydroxypropylmethyl cellulose solution 20 mg/ml	S01KA02	IPD
Carbamazepine Tablets 200 mg	N03AF01	OPD	Timolol Eye Drops 0.25%	S01ED01	OPD
Phenytoin Oral suspension 25 mg/ml	N03AB02	OPD	Tobramycin and Dexamethasone Ophthalmic Suspension 0.30%+0.10%	S01CA01	OPD
Phenytoin Tablets 100 mg	N03AB02	OPD	Tobramycin Eye Drops 0.30%	S01AA12	OPD
Acyclovir Suspension 400 mg/ 5ml	J05AB01	OPD	Tobramycin Ophthalmic Ointment 0.30%	S01AA12	OPD
Acyclovir Tablets 200 mg	J05AB01	OPD	Isoxsuprine Injection 5 mg/ml	C04AA01	OT, IPD
Acyclovir Tablets 800 mg	J05AB01	OPD	Isoxsuprine Tablets 20 mg	C04AA01	OPD
Amikacin Injection 100 mg	J01GB06	IR, IPD	Misoprostol Tablets 200 mcg	G02AD06	OPD
Amikacin Injection 500 mg	J01GB06	IR, IPD	Chloridazepoxide Tablets 10 mg	N05BA02	OPD
Amoxycillin and Cloxacillin Capsules 250mg + 250mg	J01CR50	OPD	Chlorpromazine Tablets 100 mg	N05AA01	OPD

Community Health Centre (140 medicines)					
Name of Drug	**ATC code (at lowest level)**	**Usage**	**Name of Drug**	**ATC code (at lowest level)**	**Usage**
Amoxycillin and Potassium Clavulanate Tabs 500mg + 125mg	J01CR02	OPD	Clonazepam Tablets 1 mg	N03AE01	OPD
Azithromycin Tablets (DT) 100 mg	J01FA10	OPD	Fluoxetine Capsules 20 mg	N06AB03	OPD
Azithromycin Tablets 250 mg	J01FA10	OPD	Haloperidol Tablets 1.5 mg	N05AD01	OPD
Azithromycin Tablets 500 mg	J01FA10	OPD	Haloperidol Tablets 5 mg	N05AD01	OPD
Cefixime Tablets 100 mg	J01DD08	OPD	Lithium Carbonate Tablets 300 mg	N05AN01	OPD
Cefixime Tablets 200 mg	J01DD08	OPD	Sertraline Tablets 50 mg	N06AB06	OPD
Cefotaxime Injection 1 g	J01DD01	IPD	Trifluperazine Tablets 5 mg	N05AB06	OPD
Cefotaxime Injection 250 mg	J01DD01	IPD	Beclomethasone Inhalation 200 mcg/ dose	R03BA01	OPD
Ceftriaxone Injection 125 mg	J01DD04	IR, IPD	Budesonide Nebulizer Suspension 0.25 mg/ml	R03BA02	IR, IPD
Ceftriaxone Injection 1 g	J01DD04	IR, IPD	Ipratropium Bromide Nebulizer Solution 250 mcg/ml	R03BB01	IR, IPD
Ceftriaxone Injection 250 mg	J01DD04	IR, IPD	Salbutamol Inhalation 100 mcg/ dose	R03AC02	OPD
Ceftriaxone Injection 500 mg	J01DD04	IR, IPD	Multiple Electrolytes & Dextrose Injection Type III IP (Electrolyte "M" Injection)	B05BB02	OT, IPD
Clotrimazole Vaginal Tablets 500 mg	G01AF02	OPD	Potassium Chloride Injection 0.15 gm/ml 0.15 gm/ml	B05XA01	OT, IPD
Fluconazole Tablets 150 mg	J02AC01	OPD	Potassium chloride Oral Solution 500 mg/ 5ml	A12BA01	OPD
Griseofulvin Tablets 125 mg	D01BA01	OPD	Hyoscine Butyl bromide Tablets 10 mg	A03BB01	OPD
Ofloxacin Tablets 200 mg	J01MA01	OPD	Drotaverine Tablets 40 mg	A03AD02	OPD
Trihexyphenidyl Hydrochloride Tablets 2 mg	N04AA01	OPD	Betamethasone Sodium Phosphate Injection 4 mg/ml	H02AB01	OT, IR, IPD
Ethamsylate Injection 250 mg/ 2ml	B02BX01	OT, IR, IPD	Vecuronium Bromide for Injection (Freeze Dried) 4 mg	M03AC03	OT, IPD
Heparin Sodium Injection 5000	B01AB01	OT, IPD	Phenobarbitone Injection 200	N03AA02	IPD

Community Health Centre (140 medicines)					
Name of Drug	**ATC code (at lowest level)**	**Usage**	**Name of Drug**	**ATC code (at lowest level)**	**Usage**
IU/ml			mg/ml		
Atorvastatin Tablets 10 mg	C10AA05	OPD	Flurbiprofen Sodium Ophthalmic Solution 0.03%	S01BC04	OPD
Clopidogrel Tablets 75 mg	B01AC04	OPD	Lidocaine Hydrochloride Topical Solution 4%	D04AB01	IPD
Digoxin Injection 0.25 mg/ml	C01AA05	OT, IPD	Fluconazole Eye Drops 0.3%	D01AC15	OPD
Digoxin Tablets 0.25 mg	C01AA05	OPD	Ofloxacin Suspension 50 mg/5ml	J01MA01	OPD
Isosorbide mononitrate Tablets 20 mg	C01DA14	OPD	Furazolidone Tablets 100 mg	G01AX06	OPD
Lisinopril Tablets 5 mg	C09AA03	OPD	Tinidazole Tablets 300 mg	J01XD02	OPD
Losartan Tablets 50 mg	C09CA01	OPD	Tinidazole Tablets 500 mg	J01XD02	OPD
Magnesium Sulphate Injection (50%) 50 mg/ml	A12CC02	OT, IPD	Indomethacin Capsules 25 mg	M01AB01	OPD
Methyldopa Tablets 250 mg	C02AB01	OPD	Diclofenac Tablets (SR) 100 mg	M01AB05	OPD
Nifedipine capsules 5 mg	C08CA05	OPD	Clotrimazole mouth paint (Clotrimazole 1% w/v) 1%	A01AB18	OPD
Nifedipine Tablets (Sustained Release) 10 mg	C08CA05	OPD	Chlorhexidine Gluconate Solution 5%	D08AC02	OT
Ramipril Capsules 2.5 mg	C09AA05	OPD	Metformin Hydrochloride SR Tablets 1000 mg	A10BA02	OPD
Acyclovir Cream 5%	D06BB03	OPD	Glipizide and Metformin Hydrochloride Tablets 5 mg + 500 mg	A10BD02	OPD
Tropicamide Eye Drops 1%	S01FA06	IPD	Glibenclamide and Metformin Hydrochloride (SR) Tablets 5 mg + 500 mg	A10BD02	OPD
Glutaraldehyde Solution 2%	V07AV	OT	Metformin Hydrochloride (SR) and Glimepiride Tablets 500 mg + 1 mg	A10BD02	OPD
Acetazolamide Tablets 250 mg	S01EC01	OPD	Metformin Hydrochloride (Sustained Release) and Glimepiride Tablets 500 mg + 2 mg	A10BD02	OPD
Mannitol Injection 20%	B05BC01	OT, IPD	Glimepiride, Pioglitazone and Metformin Hydrochloride	A10BD	OPD

Community Health Centre (140 medicines)					
Name of Drug	**ATC code (at lowest level)**	**Usage**	**Name of Drug**	**ATC code (at lowest level)**	**Usage**
			(SR) Tablets 2mg + 15mg + 500mg		
Spironolactone Tablets 25 mg	C03DA01	OPD	Amlodipine and Enalapril Maleate Tablets 5 mg +5mg	C09BB	OPD
Torsemide Tablets 10 mg	C03CA04	OPD	Losartan Potassium & Amlodipine Tablets 50 mg + 5mg	C09DB06	OPD
Ondansetron Injection 2 mg/ml	A04AA01	IR, IPD	Losartan Potassium & Hydrochlorothiazide Tablets 50 mg + 12.5mg	C09DA01	OPD
Pantoprazole Injection 40 mg	A02BC02	IR, IPD	Amlodipine and Lisinopril Tablets 5 mg +5mg	C09BB03	OPD
Carbimazole Tablets 5 mg	H03BB01	OPD	Amlodipine and Atenolol Tablets 5 mg +50mg	C07FB03	OPD
Conjugated Estrogen Tablets 0.625 mg	G03C	OPD	Hydrochlorthiazide Tablets 25 mg	C03AA03	OPD
Dinoprostone Cream 0.5 mg	G02AD02	IPD	Lisinopril Tablets 10 mg	C09AA03	OPD
Ethinyloestradiol Tablets 50 mcg	G03CA01	OPD	Losartan Tablets 25 mg	C09CA01	OPD
Hydroxyprogesterone Injection 250 mg/ml	G03DA03	IPD	Torsemide Injection 10 mg/ml 10 mg/ml	C03CA04	IPD
Norethisterone Tablets 5 mg	G03DC02	OPD	Amoxycillin Oral Suspension (Dry Syrup) 125 mg/5ml	J01CA04	OPD
Pioglitazone Tablets 15 mg	A10BG03	OPD	Carbamazepine Oral Suspension 100 mg/5ml	N03AF01	OPD
Progesterone Injection 200 mg /2ml	G03DA04	IPD	Cefpodoxime Dispersible Tablets 50 mg	J01DD13	OPD
Thyroxine Sodium Tablets 100 mcg	H03AA01	OPD	Timolol Eye Drops 0.50%	S01ED01	OPD

District Hospital (67 medicines)						
Name of Drug	**ATC code (at lowest level)**	**Usage**	**Name of Drug**	**ATC code (at lowest level)**	**Usage**	**Name of Drug**
Bupivacaine Hydrochloride in Dextrose Injection 5mg + 80mg per ml	N01BB51	OT		Diltiazem Tablets 30 mg	C08DB01	OPD
Bupivacaine Injection 0.50%	N01BB01	OT		Streptokinase Injection 15 Lac units	B01AD01	IPD
Isoflurane	N01AB06	OT		Diatrizoate Meglumine and Diatrizoate Sodium Injection USP 60% (iodine concentration 292 mg/ml) 60%	V04CX	Lab
Propanol Injection 10 mg/ml	N01AX10	OT		Diatrizoate Meglumine and Diatrizoate Sodium Injection USP 76%w/v (iodine concentration 370 mg/ml) 76%	V04CX	Lab
Fentanyl Citrate Injection 50 mcg/ml	N01AH01	OT, IPD		Iohexol (Non Ionic contrast medium in Sterile aqueous solution) 300 mg Iodine/ml.	V08AB02	Lab
Morphine Sulphate Injection 10 mg/ml	N02AA01	OT, IPD		Iohexol (Non Ionic contrast medium in Sterile aqueous solution) 240 mg Iodine/ml.	V08AB02	Lab
Cefoperazone and Sulbactum for Injection 1 g + 0.5 g	J01DD62	IPD		Carboprost Tromethamine Injection 0.25 mg/ml	G02AD04	OT, IPD
Ceftazidime Injection 1 g	J01DD02	IPD		Clomiphene Tablets 25 mg	G03GB02	OPD
Ceftazidime Injection 250 mg	J01DD02	IPD		Clomiphene Tablets 50 mg	G03GB02	OPD
Ceftazidime Injection 500 mg	J01DD02	IPD		Human Anti Rabies Immunoglobulin Injection 150 IU/ml	J06BB05	IPD
Itraconazole Capsules 100 mg	J02AC02	OPD		Tetanus Immunoglobulin 250 IU	J06BB02	IPD
Meropenem Injection 500 mg	J01DH02			Atracurium Injection 10 mg/ml	M03AC04	OT, IPD
Methotrexate Tablets 2.5 mg	L01BA01	OPD		Glycopyrrolate Injection 0.2 mg/ml	R03BB06	OT, IPD
Levodopa and Carbidopa Tablets 100 mg + 10 mg	N04BA01	OPD		Midazolam Injection 1 mg/ml	N05CD08	OT, IPD

District Hospital (67 medicines)						
Name of Drug	**ATC code (at lowest level)**	**Usage**	**Name of Drug**	**ATC code (at lowest level)**	**Usage**	**Name of Drug**
Levodopa and Carbidopa Tablets 250 mg + 25mg	N04BA01	OPD		Valethamate Bromide Injection 8 mg/ml	A03AB	OT, IPD
Acenocoumarol Tablets 2 mg	B01AA07	OPD		Olanzapine Tablets 5 mg	N05AH03	OPD
Deferasirox Tablets 100 mg	V03AC03	OPD		Risperidone Tablets 2 mg	N05AX08	OPD
Deferasirox Tablets 500 mg	V03AC03	OPD		Risperidone Tablets 1 mg	N05AX08	OPD
Deferiprone Capsules 500 mg	V03AC02	OPD		Peritonial Dialysis Solution IP	B05D	IPD
Desferrioxamine Injection (For I.M. Injection and I.V., S.C. Infusion) 500 mg	V03AC01	IPD		Factor – IX Concentrate 600 IU	B02BD04	IPD
Dried Factor VIII Fraction (IV use) 250 IU	B02BD02	IPD		Hydroxyethyl Starch (130/4) 6% w/v with Sodium Chloride 0.9% w/v IV Infusion	B05AA07	IPD
Enoxaparin Sodium Injection 60 mg	B01AB05	OT, IPD		Cloxacillin Sodium Injection 500 mg	J01CF02	IPD
Human Albumin Solution 20%	B05AA01	IPD		Piperacillin and Tazobactum for Injection 4 gm + 500 mg	J01CR05	
rh-Erythropoetin Injection 2000 IU	B03XA01	IPD		Meropenem Injection 1 g	J01DH02	
Amiodarone Tablets 100 mg	C01BD01	OPD		Iohexol (Non Ionic contrast medium in Sterile aqueous solution) 300 mg Iodine/ml.	V08AB02	Lab
Amiodarone Tablets 200 mg	C01BD01	OPD		Diltiazem Tablets 30 mg	C08DB01	OPD
Amiodarone Hydrochloride Injection 50 mg/ml	C01BD01	OT, IPD				

ANNEX D: HUMAN RESOURCES FOR HEALTH

TABLE D-1: STAFF STRENGTH IN HARYANA, 2012

Name of the Post	Sanctioned Strength	Filled	Gap
Senior Medical Officers	447	396	51
Senior Dental Surgeons	23	20	3
Medical Officers	2672	2212	460
Dental Surgeons	624	567	57
Physiotherapists	25	9	16
Sister Tutors	29	26	3
Staff Nurses	2044	1579	465
Nursing Sisters	312	300	12
Chief Pharmacists	36	19	17
Pharmacists	909	762	147
Radiographers	188	133	55
Senior Laboratory Technicians	13	12	1
Lab. Technicians (G)	688	525	163

Annex D-1. Bridge courses for AYUSH doctors

Another opportunity lies in utilizing the services of AYUSH graduates for providing primary care. One of the strategies of the NHM was to mainstream AYUSH through co-location of AYUSH services in PHCs. A large number of AYUSH practitioners are currently deployed in the states under the NHM. In additional states (i.e., Maharashtra, Chhattisgarh, and Tamil Nadu) have also experimented with AYUSH practitioners managing PHCs. In these states, AYUSH physicians are placed at the PHC and are engaged with delivery of primary health care. These practitioners after some formal bridge training prescribe allopathic medicines required for primary and preventive care. It has been also observed that there is a great willingness among these practitioners to work with public health system in rural areas and few positions of AYUSH practitioners are vacant in the states.

Among the AYUSH, the BAMS course (Bachelors of Ayurveda in Medicine and Surgery) falls closest to the competencies required to manage PHCs. In this regard, a mapping of the BAMS course with the proposed BSc (Community Health) course (see Table) was done to determine if these practitioners can also be used as mid-level professionals in public health system. The mapping found that 86 percent of course content of the Public Health Competency and 99 percent of course content of Clinical Competency of BSc Community Health course matches the BAMS course. The BAMS course also builds Ayurvedic clinical care competencies, which are very helpful in preventing diseases, promoting health, and managing various diseases especially NCDs.

TABLE D-1.2: BSC COMMUNITY HEALTH COURSE MAPPING WITH BAMS COURSE

	Total no. of course content in proposed BSc (Community Health) course	Similar course content in BAMS course	BSc (CH) course content that is not available in BAMS course
Public Health Competency	82	71	11
Clinical Competency	520	518	2

Additional skills and competencies which do not map with the BSc Community Health course and are required to manage primary health care services can be taught through bridge courses in modern medicine and public health. To maintain quality, high professional standards of eligibility for and qualifying in the bridge courses can be laid down for these physicians.

Creation of such a bridge course would ensure quality mid-level professionals to provide primary, preventive, and promotive health services in rural and remote areas and would also bridge the public health professional gap in longer run. This initiative would also require supportive legal framework to authorize the practice of modern medicine for primary care by practitioners of Indian Systems of Medicine.

Annex D-2. Location-based Incentives

The location-based incentives may be provided to encourage all staff (specialists, doctors, staff nurses, pharmacists, and laboratory technicians) both from contractual and regular services, to work in hard-to-serve areas. The state may notify these facilities on:

Eligibility: All staff working in such facilities as notified in the INACCESSIBLE category would be eligible for a location-based incentive (financial and non-financial), while for HARD-TO-REACH facilities, the incentives would only be payable to all staff in the facility if the facility scores at least 40 percent in the PERFORMANCE CRITERIA. The financial incentive is to be paid on a monthly basis, preferably along with the monthly salary/compensation.

Financial incentive limits: The limits of financial incentives have been decided based on 3 key factors, namely (1) Existing compensation of health workers based on the market forces, (2) percentage shortfall in specific health worker cadres; and (3) higher incentives to facilities in HPDs

1. Factoring in the huge variation in compensation paid to health workers across various Indian states, the proposed financial incentives have been pegged as a percentage of the compensation paid to the health worker. For this purpose the compensation/ remuneration/ salary will be calculated as
   c. consolidated salary of contractual employees, without deductions,
   d. and basic salary + HRA + conveyance + DA for regular employees
2. Also, as the main objective of location-based incentives is to address the shortfall in manpower availability in hard-to-reach, very hard-to-reach, and inaccessible areas, states are advised to determine the incentives based on their individual cadre shortfalls. The location-based incentives, mentioned hereafter have been advised based on the average vacancies and shortfalls in various cadres.

Finally, as HPDs are known to have greater challenges in terms of health worker availability and provision of health services, thus affecting the health indicators adversely, a separate set of incentives have been suggested for the HPDs

The financial incentive payable in **non-HPDs** would be subject to an upper limit as per the following table:

	Specialist	Doctors (MBBS)	Doctors (AYUSH)	Radio-graphers	Staff Nurses	Pharmacists	Lab Technicians
Very hard to reach	40%	30%	30%	40%	30%	30%	30%
Inaccessible		40%	40%		40%	40%	40%

The financial incentive payable in **HPDs** would be subject to an upper limit as per the following table:

	Specialist	Doctors (MBBS)	Doctors (AYUSH)	Radio-graphers	Staff Nurses	Pharmacists	Lab Technicians
Very hard to reach	50%	40%	40%	50%	40%	40%	40%
Inaccessible		50%	50%		50%	50%	50%

Rationale

1. These are upper limits; the state may adapt these to the local conditions. The main factors affecting the percentage incentives would be:
    a. Current market rates for similar skill sets.
    b. Demand and supply gaps for various cadres.

Thus the percentages may vary from state to state, and cadre to cadre within the same state.

2. The maximum permissible incentive percentages are in line with the current incentives being paid by other states offering the maximum incentives
3. The incentives may be reviewed for effectiveness every 2 years. The key indicators to be considered at time of review may be:
    a. Percentage increase in health worker availability in hard-to-reach, very hard-to-reach, and inaccessible facilities
    b. Average tenure of various cadres in hard-to-reach, very hard-to-reach, and inaccessible facilities
    c. Percentage increase in scores of hard-to-reach, very hard-to-reach, and inaccessible facilities in Key Performance and Quality Indicators for high-impact RMNCH+A interventions

Non-financial Incentives

It is suggested that a basket of non-financial incentives be offered to the health workers working in the identified facilities. The staff may be allowed to pick any 1 (for very hard-to-reach) or 2 (inaccessible) of these benefits

1. Time-bound exit
2. Eligibility for reservation for PG seat
3. HRA in city + housing near facility
4. Additional tuition fee reimbursement for children
5. Preference in career progression
6. Mobility support

Appendix D: Performance-based Incentives

Performance-based incentives may be provided to encourage all staff (specialists, doctors, staff nurses, pharmacists, and lab technicians) both from contractual and regular services, to be motivated to achieve the RMNCH+A goals, along with the program objectives of other national programs and state's priorities. For facilities in hard-to-reach, very hard-to-reach, and inaccessible areas, the performance-based incentives would be in addition to the location-based incentives.

Annex D-3. Performance-based financial Incentives

Eligibility: All employees, both regular and contractual, in all health facilities of the state would be eligible for payment of performance-based incentives. The states may, however, consider introducing these incentives in a phased manner starting with HPDs. It is suggested that facilities are evaluated once a year, and based on the percentage improvement in the service provision, a one-time, annual incentive is paid to the facility.

Evaluation Criteria: The state may define its evaluation criteria, or key performance indicators. The indicators need to be such that adhere to the following criteria:

1. Representative of RMNCH+A services
2. Can be assessed at facility level
3. Baseline figures should be available

Maximum incentive payable

- For facilities with fewer than 30 beds, the maximum payable amount would be Rs. 3,00,000/- per annum
- For facilities with more than 30 beds, the maximum payable amount would be Rs. 10000 x no. of beds

The actual incentive payable would be calculated as follows

1	Facility score = 50 – 70% of total score	50% of maximum incentive payable
2	Facility score = 71 – 90% of total score	75% of maximum incentive payable
3	Facility score = 91 – 100% of total score	100% of maximum incentive payable

The individual incentives to be paid in cash would be distributed among all staff at the facility, according to the following guidelines:

1. In ratio of their individual compensation/remuneration/salary vis-à-vis the sum total of compensation/remuneration/salary of all staff in the facility. For this purpose the compensation/remuneration/salary will be calculated as:
    d. Consolidated salary of contractual employees, without deductions,
    e. Basic salary + HRA + Conveyance + DA for regular employees.
2. For staff transferred in or out of the facility during the assessment year, the incentive would be prorated to the time served in that facility, calculated to the nearest completed month of service.

TABLE D-2: CAPITAL AND OPERATIONAL COSTS FOR HRH

	2015/16			2016/17			2017/18			2018/19			2019/20		
	Overall Outcome : Motivated HRH Availability			Overall Outcome: Motivated HRH Availability with higher Efficiency			Overall Outcome: Motivated HRH Availability with higher Efficiency at Rural area as well			Overall Outcome: Motivated HRH Availability with higher Efficiency at rural and difficult area			Overall Outcome: Motivated HRH Availability with higher Efficiency throughout the State		
Strategies	Capital	Operational	Total	Capital	Operational	Total	Capital	Operational	Total	Capital	Operational	Total	Capital	Operational	Total
HRH															
Ensuring Numeric Adequacy			0			0			0			0			0
1. Recruitment		5525.90	5525.90		10335.57	10335.57			0			0			0
2. Rural Medical Practitioner (RMP)	40	50	90		100	100		150	150		420	420		690	690
Task Shifting	98	460	558			0			0			0			0
Trainings		346.75	346.75		189.55	189.55			0			0			0
Creation of Public Health Cadre			0			0			0			0			0
Location based Incentive		200	200		200	200		200	200		200	200		200	200
Performance based Incentive	5	215	220		215	215		215	215		215	215		215	215
Performance based Incentive for HPDs		200	200		200	200		200	200		200	200		200	200
Total	143	6997.648	7140.648	0	11240.12	11240.12	0	765	765	0	1035	1035	0	1305	1305

Assumptions

Ensuring Numeric Adequacy	Recruitment for First year is based on Sanctioned Position
	Recruitment for Second year is based on Current Population Norm based additional infrastructural Requirement
	RMP is a long term strategy and the cost reflected is for initial 5 years only
Task Shifting	98 is the deficit number of Obs. & Gyn. Specialist in the state. Same no. Of LMOs shall be trained
	460 Cost is equally divided in 23 Training Centres of the State
	Based on the first year performance, the same amount may additionally be requested
Training	MO (2212) and Staff Nurse (1579) shall be trained over 2 years on 3 days In-house Program on LS.
	Public Health Training for 132 professionals in first year is one time cost
	Based on the first year performance, the same amount may additionally be requested
Location Based Incentive	Is based on an assumption that the performance incentive may cost 2 crores per annum
Performance Based Incentive	Is based on an assumption that the performance incentive may cost 2 crores per annum
Performance Based Incentive in HPDs	Is based on an assumption that the performance incentive may cost 2 crores per annum

ANNEX E: HEALTH INFORMATION SYSTEMS

TABLE E-1: ITS SYSTEMS FOR HEALTH SYSTEMS FUNCTIONS IN HARYANA

Following are programs running in the Haryana health systems ranging over various functional areas including health information, human resources, finance, operations and logistics

Facility level	Community level	Program and other Management
Health Management Information System(HMIS)	Mother and Child Tracking System (MCTS)	Health Management Information System
Hospital Management Information System(HIS)	Rashtriya Bal Swasthya Karyakram (RBSK)	Birth and Death
Sick Neonatal Care Unit(SNCU-MIS)	High Risk Pregnancy (HRP) tracking	Human Resource
Post Mortem Report (PMR)/Medico Legal Report(MLR)	TB (Nikshay)	Training Management Information System (TMIS)
Medical Certification for Cause of Death (MCCD)	National Aids Control Organization (NACO/HIV) MIS	Public Financial Management System (PFMS)
District Early Intervention Centre (DEIC)	Integrated Disease Surveillance Programme (IDSP)	Accredit Social Health Activist (ASHA) Portal
Reverse Anaemia Tracking Module (ATM)	National Vector Born Disease Control Program (NVBDCP)	Food and Drug Administration (FDA)
Maternal and Infant Death Reporting System (MIDRS)	Immunization Field Volunteers(IFV)	Finance/Tally, ERP
Referral Transport(RT-MIS)		Treasury Software, e-Salary/bill
Mobile Medical Unit (MMU)		
Blood Bank		
Drug procurement management unit (DPMU-MIS)		
Cold Chain Management-MIS		
Supportive supervision		
Mukhyamantri Muft Ilaaj Yojana (MMIY)		
Health Net		

ANNEX F: QUALITY IMPROVEMENT, INFRASTRUCTURE, AND HOSPITAL MANAGEMENT

TABLE F-1: COMMUNITY-LEVEL HEALTH INFRASTRUCTURE IN HARYANA, PUNJAB, AND MAHARASHTRA

	Haryana	Punjab	Maharashtra
% of villages with an ASHA	96.1	94.7	77.7
% of villages with a VHSC	43.5	58.2	82
% villages with a SC within 3km	80.4	80.2	66.6
% SCs with an ANM	90.6	73.7	94.8
PHCs functioning on a 24/7 basis	79.3	53.1	64

Data source: DLHS 4

Annex F-1. Criteria for upgrading existing infrastructure

The various infrastructural modifications in clinical services like operation theatre (OT), emergency, labor rooms, and inpatient wards involve changes in building structure civil, plumbing, heating, ventilation, and air conditioning to prevent hospital-acquired infections.

1. **OT**: To ensure better sterility and infection control, the following are required:
   - OT zoning
   - Airlock system in doors
   - Non-conductive and antistatic flooring
   - Anti-bacterial and seamless walls
   - Scrub stations with elbow operated taps for surgical hand wash
   - Heating, ventilation, and air conditioning (HVAC) system with dedicated air handling units (AHU) for each operation theatre
   - Laminar flow and HEPA filters, which prevent bacteria of more than 0.3 micron entering into the OTs.
2. **Inpatient wards:** Certain modifications would be required in inpatient wards like:
   - Functional call bell system
   - Piped medical gases
   - Curtains between adjacent patient beds to ensure patient privacy
   - Side rails for inpatient beds and stretchers to prevent patient falls
3. **Emergency area:**
   - Separate area for:

- Triage
- Patient observation
- Treatment
- Resuscitation

- All the essential equipment should be available, such as:
  - Crash carts
  - Defibrillators
  - Pulse oxymeter

4. **Disabled-friendly features:**
   - 1) Disabled-friendly toilets should have-
     - Grab bars
     - Anti-skid floors
     - Emergency call bells
     - Doors opening outwards
   - Other features like-
     - Ramps with handrails
     - Landing areas over ramps
     - Anti-skid floor

Strengthening of support services

This is one area in which government facilities usually lag behind. These are as important as clinical services and require planning both in terms of equipment and trained manpower.

- **Central Sterile Supply Department (CSSD)**: The objective of establishing a CSSD is to supply reliably sterilized articles available at the required time and place. Major responsibilities of the CSSD include processing and sterilization of surgical instruments, treatment trays, and sets. For development of the CSSD, infrastructure requirements like zoning to provide unidirectional work flow, plumbing (water requirements), and installation of HVAC system in sterile area, equipment and furniture require budget.
- **Medical Record Department:** Medical Record departments are a vital component especially in medico-legal aspects but are usually neglected in various government facilities. These departments maintain records of all outpatients and inpatients. Budget would be required for trained persons like medical record officers and technicians, procurement of racks, furniture, computer, internet connection, temperature, and humidity monitoring system. Standardized forms and formats need to be additionally incorporated and would require printing and stationary cost. Dedicated Medical Record Officers and Medical Record Technicians are required for the departments to function smoothly.
- **Laundry:** Mechanized laundry involves disinfection and washing of dirty, soiled, and infected linen so infrastructural modifications are required to be undertaken with respect to zoning of the laundry area, sturdy and antiskid flooring, tiling of walls, development of separate linen store, exhaust facility, procurement of new equipment, racks, temperature and humidity monitoring system, trolleys for dirty, soiled, and clean linen transportation.

- **Engineering services:** In a hospital, the patient and the care provider suffer from numerous complaints related to services such as: bio-medical engineering, electricity, plumbing, civil works, general repair, and maintenance. There should be a dedicated wing for such services.
- **Piped medical gases in manifold room:** To prevent falling gas cylinders in manifold areas, materials like chains, stands, anti-skid flooring is required, which have costs. The manifold room should be well ventilated. Also a reserve bank of manifold needs to be created for emergencies.
- **Pharmacy**: Budget is required for air conditioning, deep freezer, double lock, and key storage cupboards for narcotics, temperature, and humidity monitoring system.
- **General modifications:** Fixing of loose wirings and installation of HVAC, AHU in various high-risk areas like NICU, ICUs, labor rooms, and emergency room would also be required.
- **Septic tanks:** For effluents
- **Public announcement system, intercom/ telephone facilities/ IT (software licenses)**
- **Reverse Osmosis plant for laboratory and OTs, generator** for power back-up (250 KVA-500 KVA)
- **Landscaping:** Upkeep and maintenance.

License/ Regulatory compliances: The license/ regulatory compliances require coordination with various bodies.

- **Registration of radiology equipment:** One of the regulatory requirements is the registration of radiology equipment from Atomic Energy Regulatory Board (AERB) in various facilities in the district hospitals
- **No objection Certificate (NOC) for fire safety**: The hospital requires certain fire-fighting equipment like adequate type and number of fire extinguishers, fire hoses/ hose reels, water hydrants, overhead tanks of adequate capacity for water storage, smoke detectors, fire alarms, and adequate fire exit signage. It forms an essential component of Disaster Management in hospitals.
- **Building occupancy certificate:** Another regulatory requirement involves regarding providing Building Initiation Certificate and Building Completion Certificate from the local body/ MC/ HUDA.
- **Biomedical Waste license:** Needs to be obtained from the pollution control board for generating biomedical waste that contains human anatomical wastes, blood, body fluids, disposable syringes, used bandages, surgical gloves, blood bags, intravenous tubes, etc.
- **Others**: Such as licenses for operating lifts, explosives, storage of gas cylinders, narcotics, and psychotropic drugs.

TABLE F-2: ADDITIONAL HUMAN RESOURCE REQUIREMENTS FOR 200-BED HOSPITAL

Sr. No.	Name of the post	Existing Norms	Approved Norms	Actual Requirement
1	Deputy Medical Supritendent.	0	2	2
2	Senior Medical Officer/Medical Officers	60	60	60
3	Nursing Sisters***	10	10	34
4	Staff Nurses***	46	90	135
5	Senior Pharmacist	0	1	2
6	Pharmacists	5	10	12* (10 in M&E for dispensing, store duty, 2 at night for total OPD load of 1500)
7	Senior Lab Technician	0	1	1
8	Lab Technicians	4	14	18 (8M, 6E,4N-There are various sections in lab, Collection Centre, ANC and Emergency Lab)
9	Radiographers	1	6	6
10	ECG Technicians	0	3	3
11	Plaster Technicians	0	2	2
12	Dieticians	1	2	2
13	Bio Medical Engineer	0	1	1
14	Quality Manager	0	1	1

TABLE F-3: YEAR-WISE NEW FACILITY INFRASTRUCTURE FORECAST*

	2015/16			2016/17			2017/18			2018/19			2019/20		
Amount (crores)															
Strategies	**Capex**	**Opex**	**Total**	**Capex**	**Opex**	**Total**	**Capex**	**Opex**	**Total**	**Capex**	**Opex**	**Total**	**Capex**	**opex**	**Total**
CHC															
Building	38.69		38.69	41.78		41.78	62.67		62.67	67.69	0	67.69	0	0	
Equipment	5.6		5.6	5.6	0.56	6.16	8.4	0.84	9.24	9.07	0.91	9.98	0	0	
Human Resource	0	5.98	5.98	0	12.43	12.43	0	22.88	22.88	0	34.17	34.17	0	36.9	36.9
PHC	0	0		0	0		0	0		0	0		0	0	
Building	46.8		46.8	50.54		50.54	75.82		75.82	81.88	0	81.88	0	0	
Equipment	2.6		2.6	2.6	0.26	2.86	3.9	0.39	4.29	4.21	0.42	4.63	0	0	
Human Resource	0	3.83	3.83	0	7.96	7.96	0	14.66	14.66	0	21.89	21.89	0	23.64	23.64
SC	0	0		0	0		0	0		0	0		0	0	
Building	47.25		47.25	51.03		51.03	76.55		76.55	82.67	0	82.67	0	0	
Equipment	4.05		4.05	4.05	0.41	4.46	6.08	0.61	6.68	6.56	0.66	7.22	0	0	
Human Resource	0	6.97	6.97	0	14.49	14.49	0	26.67	26.67	0	39.84	39.84	0	43.03	43.03
	144.99	16.77	161.76	155.61	36.1	191.71	233.41	66.05	299.46	252.08	97.89	349.98		103.57	103.57

Data Source: DGHS, Haryana Medical Services Corporation

* Assumptions: Standard inflation of 8% is applied, 20 percent of the facilities to be constructed for the first and second year and 30% would be for third and fourth year.

TABLE F-4: UPGRADING OF EXISTING FACILITIES FORECAST

	2015/16			2016/17			2017/18			2018/19			2019/20		
Amount in Lakhs															
Strategies	**Capex**	**Opex**	**Total**	**Capex**	**Opex**	**Total**	**Capex**	**Opex**	**Total**	**Capex**	**Opex**	**Total**	**Capex**	**Opex**	**Total**
District Hospital (DH)	0.28	3.72	4.00	0.61	8.04	8.65	0.65	8.69	9.34	0.76	10.05	10.81	0.82	10.86	11.67
DH/Sub-District Hospital (SDH)	0.13	1.79	1.92	0.29	3.86	4.15	0.31	4.17	4.48	0.36	4.83	5.19	0.39	5.21	5.61
Community Health Centre (CHC)	0.24	3.23	3.47	0.53	6.98	7.50	0.57	7.54	8.10	0.66	8.72	9.38	0.71	9.42	10.13
Primary Health Centre (PHC)	0.30	3.95	4.25	0.64	8.53	9.18	0.69	9.22	9.91	0.80	10.67	11.47	0.87	11.52	12.39
Total	0.96	12.69	13.65	2.06	27.42	29.48	2.23	29.61	31.84	2.58	34.27	36.85	2.79	37.01	39.80

Data Source: Haryana Health System Resource Center

*Assumptions: Standard inflation of 8% is applied.

ANNEX G: NUTRITION

TABLE G-1: TOTAL AND SEVERE RATES OF UNDER-NOURISHED CHILDREN UNDER 5 IN HIGH-INCOME STATES.

Children below 5 years	Haryana	Punjab	Maharashtra
Wasting - moderate	32.3	21.1	34.1
Wasting - severe	18.6	10.1	20
Stunting - moderate	31.9	28.8	30.0
Stunting - severe	15.4	12.2	14.7
Underweight - moderate	36.2	25.2	38.7
Underweight - severe	15.2	8.2	14.9

Data source: DLHS 4