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Government of Rajasthan

Chief Minister's Rajasthan Economic Transformation Advisory Council

A STUDY TO ASSESS THE GAPS AND CHALLENGES IN HEALTH CARE SERVICE DELIVERY IN RAJASTHAN IN ORDER TO INFORM POLICY

A STUDY TO ASSESS THE GAPS AND CHALLENGES IN HEALTHCARE SERVICE DELIVERY IN RAJASTHAN IN ORDER TO INFORM POLICY

A Rapid Appraisal conducted on invitation from the Chief Minister's Economic Transformation Advisory Council, Government of Rajasthan

Prepared by Public Health Resource Society

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EXECUTIVE SUMMARY

Rajasthan has an intricate public health system with concerted investments in the last few years indicating the high priority accorded to improving the health status of the state's residents. However, in comparison to other similar states as well as the national average, the state fares poorly in terms of health process and outcomes. This study was conceptualized and developed following an invitation from the Chief Minister's Economic Transformation Advisory Council in order to arrive at health policy recommendations to improve the quality of medical services in the public health sector as well as the overall provision of health care. In particular, the government indicated a special interest in relatively low-cost and 'doable' short-term innovations such as telemedicine that have been used in settings similar to Rajasthan.

The study used a health systems approach with a focus on the most vulnerable communities, and doable, short-term innovations. Both primary and secondary research were used for this study. Jaipur and Karauli districts were selected for primary field research and nine facilities were visited in the month of October 2021 for this purpose.

The study findings were categorized into five themes of interest: public health facilities, health services and schemes, human resources for health, programme management, and governance. Overall, the study suggested that there have been considerable improvements in the processes within the health sector and this has resulted in favourable outputs and outcomes. However, the gaps that remain require simultaneous, concerted action on multiple fronts. To this end, five seminal recommendations are proposed below that have the potential to address a multitude of challenges[1].

Recommendation 1: Urgent establishment of a geographic information system for rationalization of facilities, services, and human resources: every district, every facility

As a first step to ensuring equitable and rational distribution of facilities, the study recommends urgent geospatial mapping (every district, every facility) be undertaken for the rationalization of location to fulfil population norms. Some published literature is already available for this, suggesting it is entirely feasible to accomplish this using available data. Furthermore, this mapping should include facilities of potential partner agencies such as the Armed Forces, ESIC and not-for-profit organizations (e.g., NGOs and Mission Hospitals). The rationalization of facilities should also ensure that the services match the current gap and demand, for instance, in access to

[1] Please see the full report for detailed findings and recommendations.

institutional delivery, contraceptive and child health services. This mapping would then form the backbone of a geographic information system (GIS) that includes the mapping of HR and services.

Recommendation 2: Revisioning of the health system – creating relevance for the three-tiered system using comprehensive public health services and integrating telemedicine

The study suggests that there is a pathway to reintroduce rationalization in at least two different ways that would potentially result in better access to people, better management, and more efficiency. The first of these is the process of geospatial rationalization as mentioned above, that would allow for a hierarchical system of supportive supervision and referral between the three tiers. The study suggests the feasibility of a fully integrated sub-system of telemedicine as the second important way, as discussed in the brief and the full report.

Recommendation 3: Develop and implement a comprehensive, fair, transparent HR policy with special reference to postings and transfers

The literature review as well as the primary work reinforces that a fair, transparent policy is important for the recruitment, retention, and availability of personnel at health facilities and can address most of the bottlenecks related to HR in the health sector. This policy would also help in minimizing political interference and increase transparency within the public health system. A comprehensive HR policy would be further enabled by a legal provision, as in the case of the recent Act created for better procurement. The study emphasizes the need for a form of lateral entry for specialists, to be made explicit in the policy, which will be useful in increasing specialist recruitment at CHC level and above. Additionally, it is recommended that performance-linked incentives such as promotions, relaxations in cut-off marks be incorporated in a transparent, comprehensible manner using the Annual Confidential Reports or other such monitoring mechanisms that are already available.

Recommendation 4: Institute a coordinating body – a PMU – to improve coordination between the National Health Mission (Centre) and the Directorate of Health and Medical Services (State), as well as convergence between sectors related to health

This would have to be an interdisciplinary body set up in a legitimate manner, with political mandate, and given the responsibility of coordination, integration, prioritisation and resource generation. The envisaged roles include acting as a translatory mechanism for policy, contextualizing the implementation of national programmes within the state; coordination of the horizontal integration of the health system; operational research to inform programme and policy; development of intersectoral, integrated models of care such as multidisciplinary health workforce

teams; identification of capacity needs and capacity building; monitoring of services, and outcomes, including monitoring of rational treatments, quality control of health care services; and advising policy makers on health policy. The PMU would need a strong integrated comprehensive database alongside a GIS as reinforced throughout the study. Some models are available that point to the usefulness of such an agency, such as the State Health Resource Centre (SHRC), Chhattisgarh which is expected to be an apex body for technical support to the health system at all levels within the state. The options to position this PMU are: within the Health department itself; within the State Institute of Health and Family Welfare; within the newly emerging Center of Public Health Excellence or at a School of Public Health in the state; within a semi-autonomous body specially created for the purpose, e.g., SHRC, Chhattisgarh.

Recommendation 5: Create a high-level group in CM Office for health governance

If the other recommendations of the study are to gain ground, the creation of a high-level group in the Chief Minister's Office, i.e., a governing body, that oversees health and supports the PMU in its tasks through leadership and higher-level policy and administrative decision-making, is required. This body, constituted by implementers, technical agencies, civil society groups and key decision makers (CMO, task forces, standing committees) would also provide strategic oversight and conduct a biannual review of the health system and policies. The PMU, positioned as the apex technical and implementing body, would be well able to represent the overlap between the 'implementers' and 'technical agencies'. Apart from giving political legitimacy to key decisions, it is expected that its creation and placement will result in the adoption of a whole-of-government approach to health, leading to the consideration of health in all policies. The literature review also revealed that this approach addresses a perceived lack of command as well as improves prioritization of health, a gap that was articulated by several of the study participants.

The study team envisions that the implementation of these recommendations will result in improved access to health care for the most vulnerable communities, with appropriate, acceptable, high-quality services provided by adequate HR.

INTRODUCTION

Rajasthan has an intricate public health system with concerted investments in the last few years indicating the high priority accorded to improving the health status of the state's residents. Initiatives such as the Chief Minister's schemes for free medicines and diagnostics scheme have ensured universal and free access to these essential services. The state's expansive network of healthcare institutions is testimony to the vastness of the system, as well as indicative of the possible challenges that arise in its administration.

In terms of geographical area, Rajasthan is one of the largest states in India and has a low population density of 200 persons per square kilometre as compared with the population density of 382 persons per square kilometre for India. Three fourth of its population lives in rural areas and is spread across over 44,672 villages. Providing health services in the remote, rural, desert areas continue to be a challenge for the state. Additionally, Rajasthan comprises a sizable population of vulnerable communities (17.8 percent scheduled castes and 13.5 percent respectively scheduled tribes) that pose different challenges as compared to the rest of the state.

Conceptualization

This study was conceptualized and developed following an invitation from the Chief Minister's Economic Transformation Advisory Council. The Government indicated an interest to improve the quality of medical services in the public health sector as well as the overall provision of health care. In particular, the government indicated a special interest in innovations such as telemedicine that have been used in settings similar to Rajasthan.

However, the authors of this current study strongly believed that public health goes beyond mere treatment of disease to include prevention of disease, promotion of better health, health protection and provision of healthcare and health education, focus on whole populations rather than individuals, concern for determinants of health and health equity and community participation, the role of state in ensuring the above continues to be primary in a country like India. Government health systems are meant to not only provide these comprehensive public health services, but also coordinate inter-sectoral convergence (with other departments and public systems and services) in order to ensure health for all individuals and communities.

What is also needed is a focus on equity to ensure that the communities that remain marginalized are given priority and receive the kind of programmes and services that could be specific to their

challenges and needs. It can also be argued that setting up of systems that cater to the most left-out populations are likely to do well for those that are better off, while the converse does not necessarily hold, as evidenced by the fact that many years of health care implementation has continued to leave certain communities significantly under-served. This study is designed to keep this principle in mind.

The healthcare delivery system in Rajasthan is multi-tiered with different functions performed at different levels. The major components of the delivery system are the network of facilities, the services themselves, the human resources for health, and the supply of medical products and technologies. Nevertheless, there are other factors, including the equitability of services, accountability of providers, local health priorities, leadership and governance, etc. that determine the overall efficiency of the healthcare system. In assessing the healthcare delivery system, it is important to closely examine the supply side barriers.

Context

Rajasthan's health indicators remain poor in comparison to the national average (Ram et al., 2021). According to the National Family Health Survey – 5, the infant mortality rate (IMR) is 30.3 per 1,000 live births, with the IMR in rural areas at 32.2 in comparison to 22.2 in urban Rajasthan. Only 60.6% of pregnant women had at least four antenatal checkups in comparison to the national average of 68.1% (International Institute for Population Sciences, 2020). The secular trends that indicate improvement are also believed to mask widening health inequalities (Dupas & Jain, 2021; Panda & Mohanty, 2019). Additionally, there is a transition in the disease burden with a high prevalence of non-communicable diseases with significant geographic variation. For instance, at over 15%, obesity and hypertension are highly prevalent in the central and northwestern districts of Rajasthan (R. Gupta et al., 2018). At the same time, communicable, maternal, neonatal, and nutritional diseases, as well as injuries remain common in the state, and for several conditions, more prevalent than the national average (India State-Level Disease Burden Initiative Collaborators, 2017). A further complication arises in the form of discrimination in access to health services. For example, the Nat community, a denotified tribal community, is subject to exclusionary practices and discrimination in accessing healthcare at the village level (Jangir, 2019). Unequal distribution of human resources for health and several other factors have resulted in geographical disparities in health in the state. An example of this is seen in maternal and child health (MCH) outcomes: the hilly, tribal and desert districts of Banswara, Barmer, Chittaurgarh,

Dungarpur, Jalor, Jaisalmer, and Karauli have much worse MCH indicators than their urbanized counterparts (Chauhan, 2020). In a study conducted in rural parts of Rajasthan, it was found that low quality public facilities are found to be correlated with worse health (Gurbani, 2017). Elsewhere, researchers found that in reference to maternity care, the most significant predictors of the volume of delivery care were availability of a labour room and facility opening hours at the health facilities. Greater availability of medical and paramedical staff was found to be positively associated with institutional deliveries, as was adequate infrastructure (Vidler et al., 2016). Factors related to human resource have been found to be greatly affecting the utilization of health care services as well.

More recently, the NITI Aayog Health Index IV report highlights several elements of the health system in Rajasthan (NITI Aayog, 2021). Among the states in its category, Rajasthan was among those that did not deteriorate, but did not improve ranks either. In fact, it was among the states that showed a negative incremental performance on the health index as compared to the base year of 2018-19, leading to an overall categorization of 'worst performer' among the larger states. An overall index score of 41.33 (out of 100) indicates a clear scope for improvement on many fronts. The health index used by NITI Aayog consists of three domains – health outcomes, governance and information, and key inputs and processes. On the health outcomes index, Rajasthan scores a 35.00 with an increase of 0.80 over the base year of 2018-19; it scores a 61.43 on the governance and information index with a positive increment of 3.23 since 2018.19; and it scores 52.04 on the key inputs and processes index, decreasing by 7.30 points since 2018-19.

The following section describes the development of the study and its methodology.

METHODOLOGY

Aim

- To develop health policy recommendations for the state of Rajasthan based on a systematic study using a health systems approach to make public health services more accessible and responsive to the population, especially to the most vulnerable communities, with special reference to doable, short-term innovations.

Objectives

- To understand the existing structure and functioning (infrastructure, human resource, supplies) of health services at different levels in Rajasthan.
- To gain an understanding of the existing barriers and challenges in the health facilities and services at primary, secondary and tertiary levels and critically analyze the factors affecting health service delivery from the point of view of the community being served.
- To examine the relevance of health sector innovations, including the use of telemedicine, that have been made in other states and countries facing similar challenges and barriers to the context of Rajasthan.
- To develop policy recommendations based on these findings.

Study location

The study was undertaken in urban and rural areas of Rajasthan. Existing research indicated that there are significant geographic disparities in the functioning of the public health system in the state. In particular, the state's southern districts were found to be inefficient in comparison to the better performing northern districts as a result of scarce health workforce and inadequately managed health institutions.

We selected one urban district – Jaipur – and one rural district – Karauli – based on a review of several demographic and health-related indicators (refer figure 1). The basic indicators included in the review were aspirational district health and nutrition score, proportion of tribal population, calculated score for sustainable development goal (SDG) 3, and population density. The health-

related indicators included proportion of wasted children under five, infant mortality rate, under-five mortality rate, unmet need for contraception, proportion of women who had attended four or more antenatal check-ups, proportion of women who received full antenatal care, proportion of pregnant women who delivered at any health facility (public or private, i.e. institutional delivery), proportion of women who received a postnatal check-up within two days of delivery, proportion of children who received all basic vaccinations, annual notification of tuberculosis (TB) cases per one lakh population, and population served per medical institution. Several of these indicators were selected to be proxy indicators of health care services. Additionally, all experts who were interviewed for this study were also asked about their suggestions for a district to undertake the study. Inputs were also taken from the consultant group, Indicc India, and representatives of the Department of Health and Family Welfare.

Jaipur district was selected because of its status as state capital and high proportion of urban population. As for other indicators, Jaipur had one of the lowest SDG 3 scores among the districts we shortlisted despite the highest population served per medical institution, and one of the highest annual notification rates of TB cases. Further, less than half of eligible children received all basic vaccinations in the district. Therefore, it served as an apt location to study the state of healthcare services in an urban context.

Karauli, meanwhile, is a district in the eastern part of Rajasthan, bordering Madhya Pradesh and the districts of Sawai Madhopur, Dholpur, Bharatpur, and Dausa. The district is relatively new, having been formed out of Sawai Madhopur in 1997. About 23% of the population in the district belongs to scheduled tribes. The under-five mortality rate in the district is 81 per 1,000 live births as compared to 51 per 1,000 live births for all of Rajasthan. The infant mortality rate too showed a similar disparity, indicating poor child health. Additionally, only 49.8% of pregnant individuals had given birth at any health facility and just over half had received a postnatal check-up within two days. In terms of infrastructure, the Rajasthan SDG report version 2.0 by the Government of Rajasthan tells us that there is one medical institution for every 4,190 members of the population. This fares poorly as compared to the state-level value of 3,909. As one of 250 regions recognized as 'backward', the district receives funds under the Backward Regions Grant Fund. Thus, Karauli district was selected to study healthcare services in a rural context.

Figure 1: Map depicting districts selected for the study

Scope of the study

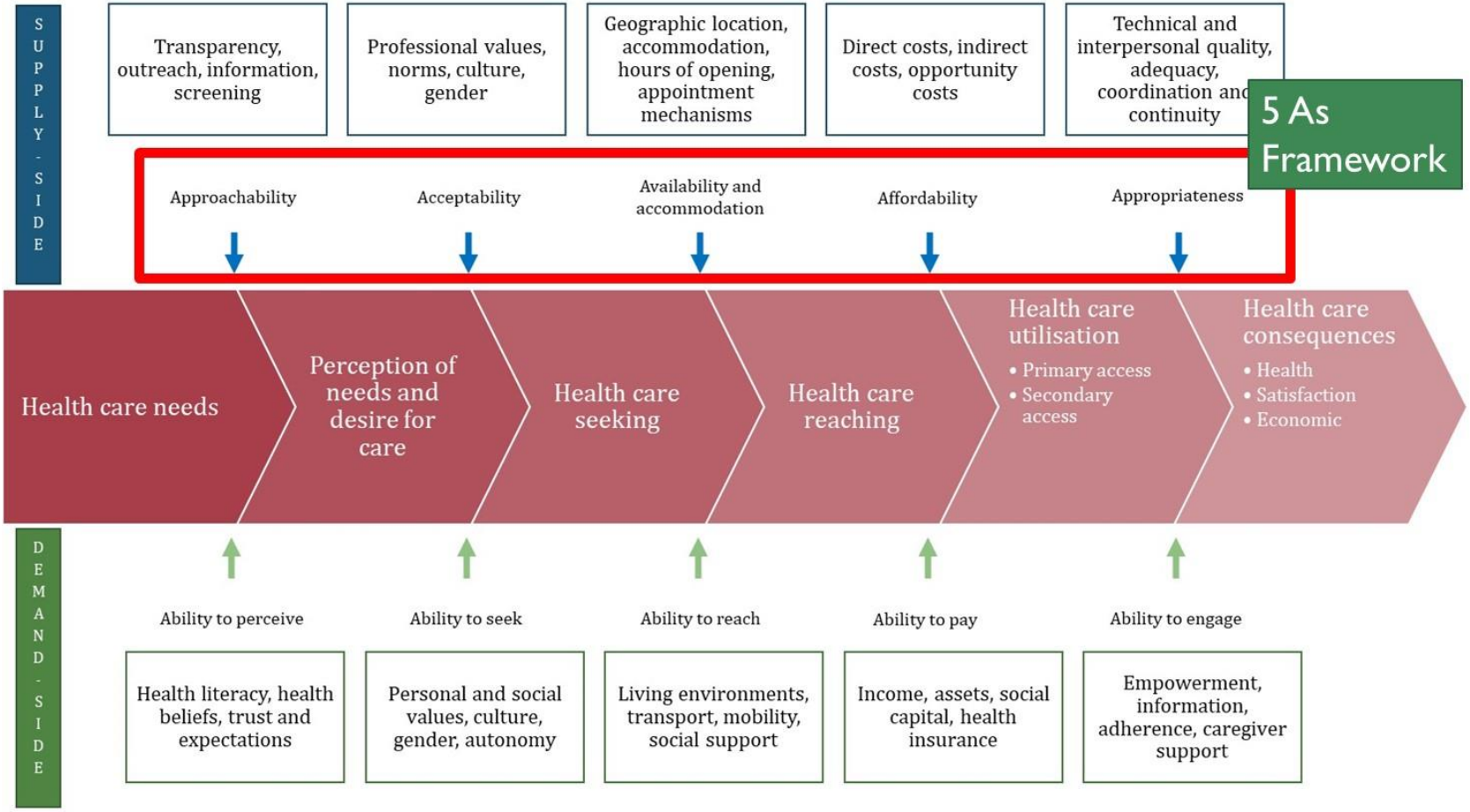
The World Health Organization defines health systems as "all organizations, people and actions whose primary intent is to promote, restore or maintain health" (Fryatt et al., 2017). This broad definition included an array of actors that provide health services including private for-profit and not-for-profit providers, health insurance organizations, researchers and research institutes, etc. However, the scope of this study was limited to the field under the purview of the Department of Medical, Health and Family Welfare, Government of Rajasthan. This included the schemes that are sponsored through central funds but are administered by the Department. Thus, the public health system of Rajasthan was the core focus of the study. Given this context, the research team conducted an analysis using a health systems approach and the 'Five As Framework' (Figure 2) (Levesque et al., 2013).

Initial conceptualization of the study, conducted through a consultative process with the government, identified three broad themes of interest – facility-level issues, community-level issues, and innovations. Facility-level issues involved skilled human resources, status of facilities and services, supply of products and technologies, equitable access, etc. Meanwhile, community-level issues included community participation platforms and community health workers. Behaviour change concerns were considered to be out of the purview of this study right from conceptualization. Finally, innovations included the scope of telemedicine and other models that have worked elsewhere, especially in low-resource settings, keeping in mind continuity of care. Of these, the team was informed that telemedicine was a particular focus area for the government.

Methods

This study included both primary and secondary research. The primary research element was qualitative in nature, drawing upon sociomedical healthcare research. Data was collected through in-depth individual interviews with key informants, including health department officials, health personnel at all levels, district and block health officials, and representatives of civil society or community-based organizations. Discussions were undertaken primarily with community health workers and community members, the latter through a focus group discussion, with a focus on the most marginalized, vulnerable communities. The respondents were selected with due consideration to gender, representation from ST and SC communities, geographical location such as tribal area, urban centre, and range of health workforce. Participant observation was a key method used throughout the study with the researchers actively engaging with the object of study and the study participants.

Figure 2: Five As Framework



Source: adapted from Levesque, JF., Harris, M.F. & Russell, G. Patient-centred access to health care: conceptualising access at the interface of health systems and populations. Int J Equity Health 12, 18 (2013). https://doi.org/10.1186/1475-9

The tools for primary research were developed following a review of literature and consultation with subject matter experts, and in accordance with the objectives of this study. Broadly, the interview guides covered the themes of core health systems, health financing, and specific issues such as health and wellness centres, insurance, community health workers and communitization, health technology, telemedicine, other innovations, urban health, COVID-19 preparedness, public-private partnerships, primary health care, medical education, and reaching vulnerable populations. All interviewees were also asked about their policy recommendations. The initial interviews were conducted virtually and lasted between 60 to 90 minutes. In-person interviews were conducted mostly in the month of October and lasted between 30 to 60 minutes. The interviews were recorded after acquiring due consent from the subject. To ensure the quality of data collected, the interviews were undertaken by the whole research team – principal investigator, research coordinator, research associate. Detailed notes were taken during all the group and individual interviews. The table below details the respondents by their designation, the number of interviews, and the mode of interview.

Table 1: Details of study participants

Respondents	Total no. of interviews	Mode of interview
Mission Director, NHM	1	In-person
Secretary, Budget	1	Virtual
Additional Director, Rural Health	1	In-person
State Nodal Officer, IDSP	1	In-person
Director, Family Welfare	1	In-person

Additional Director, Hospital Administration	1	In-person
Project Director, RBSK	1	In-person
Chief Medical and Health Officer	2	In-person
Deputy CMHO	1	In-person
District Programme Manager	1	In-person
Medical officer in charge	1	In-person
Medical officer	3	In-person
Auxiliary Nurse Midwives	4	In-person
Male nurse	2	In-person
LHV	2	In-person
Nursing officer	1	In-person
FGD with the community	1	In-person
Community-based/civil society organizations	5	Virtual

A field visit was undertaken in October 2021 to the districts of Jaipur and Karauli to verify the findings from the secondary research (described further below). A community-based organization, Dang Vikas Samiti, provided logistical support during the visit. Several interviews were undertaken at this time, along with visits to the facilities. The process of interviewing was the same as described above. The details of the facility visits are below:

Table 2: Details of facilities visited by the study team

Facility visited	Respondent(s)
Urban PHC – Gandhinagar	MO, LHV
Urban PHC – Malviya Nagar	Nursing officer
Satellite hospital – Chaksu	Lab technicians
PHC – Kothun	ANM, MO
CHC – Kaila Devi	MOIC, LHV
PHC – Chainpur Beriya	Male nurse, pharmacist, ANM/LHV
CHC – Kudgaon	MO
HWC – Beejalpur	ANM, CHA
HWC – Kalyani	ANM, Male nurse

The analysis of the qualitative data was done through description, classification, and connection. Thematic analysis was undertaken, and attempts were made to find relationships between pre-conceived themes of relevance. For credibility and validity of data, triangulation was undertaken. Rigour in the research was attempted through reflexivity.

This study also entailed a review of secondary literature – published and unpublished – through an iterative process. The initial search of literature in the conceptualization phase was conducted using the following search terms – health system, health care system, health infrastructure, health services, medical services, public health system, public health sector – as well as other synonyms of these terms. 'Rajasthan' was used as a limiting term along with these to gather literature related to Rajasthan alone. Additional scoping searches were conducted using the search terms 'challenges', 'barriers', 'factors', 'obstacles' to collect literature on challenges within the Rajasthan health system. Central and State government websites were searched for data and publications on existing policies and schemes, status of infrastructure and human resources, guidelines, and other relevant information. Data on health facilities and their status and utilization as well as human resources was also obtained from the government with support of the facilitating agency. As the study progressed, the search criteria were expanded to include innovations and models such as Mohalla clinics, rural health cadres, 'haat' clinics, and others that have been used to address challenges in low-resource settings in India and elsewhere. The study team also looked at recommendations issued by various expert committees and advisory groups in the past, especially those related to healthcare for vulnerable populations. All the data provided by the government on human resources, health infrastructure, allocation and expenditure for health, health indicators and community processes were used in preparing this report. This data was from across the state of Rajasthan. Overall, over 400 peer-reviewed articles, more than 50 grey literature documents, more than 50 government guidelines, and more than 30 government reports were used during the study.

Ethical considerations

Ethical clearance was taken from the Institutional Ethics Committee of Public Health Resource Society. The participant information sheet and informed consent form were prepared and translated into the local language. They were shared with the participants ahead of time and consent was recorded in all cases. After every interview or group discussion, a debriefing session was conducted. No risks were perceived to the respondents of the study. Confidentiality was

maintained throughout data collection, analysis and report-writing by removing all identifiers and using pseudonyms for all the respondents in this study. All qualitative interviews, except the in-person interviews, were recorded after taking due consent. Where recording was not done, the researchers used written notes to collect the data. Participation was voluntary with the right of the respondents to withdraw at any stage. The results of the study are to be shared with all the stakeholders through different means of dissemination.

FINDINGS AND RECOMMENDATIONS

Public Health Facilities

This section of the report discusses the public health facilities in Rajasthan. Rajasthan has an intricate public health system with concerted investments in the last few years indicating the high priority accorded to improving the health status of the state's residents. The state's network of 13,566 Subcenters (SCs) and 2,344 Primary Health Centers (PHCs), 579 Community Health Centers (CHCs), 16 other government hospitals, 120 city dispensaries, 20 subdivision hospitals, 33 district hospitals, 11 satellite hospitals, and 27 teaching hospitals and healthcare institutions are testimony to the vastness of the system. Additionally, under the Ayushman Bharat scheme, Rajasthan has set up 2,354 health and wellness centres (HWCs) of which 280 are urban PHCs, 1,948 are PHCs, and 126 are SCs.

The research team visited nine health facilities – four in Jaipur district and five in Karauli district. On the whole, the team noticed that centres were open and functional with the appointed personnel being largely present, if not out on field duty. The schemes for drugs and diagnostics were found to be functional with seemingly adequate supplies. The observed footfall at the centres varied according to the type and location of the centre; the CHC level centres were well attended by patients and the centres located in Jaipur were also well attended. However, the information on out-patient attendance confirmed fair utilization of most the of the centres excluding the sub-centres.

Location

The literature survey identified that the distribution of health centers is highly variable leading to significant health disparities in Rajasthan. This is apparent in a study comparing the physical coverage by primary health facilities in rural areas of Rajasthan. The author found that while one sub-centre covers 3,578 individuals on average, the districts of Pali and Kota are underserved with one sub-centre covering more than 5,000 individuals. Similarly, 24,791 persons are covered per PHC in Rajasthan but at least eight districts, including tribal and desert areas and the district of Jaipur, have a much poorer coverage: more than 30,000 rural population is covered by one PHC in these districts. Overall, the study concluded that several districts in Rajasthan are deprived of functioning public health facilities (Saini, 2020). Other studies using geospatial mapping or GIS

analysis have found similar disparities in health care facility distribution in areas of Rajasthan (Borana & Yadav, 2017; K. Singh & Pal, 2015). Availability of a facility within reachable distance is a predictor of utilization and influences health outcomes though the defined norms for distance vary with the nature of health care and the population in question. At the minimum, however, the population norms as defined by Indian Public Health Standards Revised Guidelines, 2012 must be adhered to.

One of the key observations from the urban PHCs visited in Jaipur city was that facilities are often located in well-to-do areas. However, the patients visiting the centre were from diverse backgrounds – from officer-grade individuals to domestic workers, indicating that access to care was somewhat equitable and the services of reasonable quality. The lack of rationalization of location of centres in urban Jaipur as well as rural areas came up as a problem in practically all the interviews conducted. For instance, one of the centres was located just 100 metres away from another health facility. This indicates a need for rationalization of services and facilities, through GIS mapping, to ensure that facilities and services are distributed equitably.

This need was reiterated during the visits to facilities in rural Jaipur and Karauli as well. It was observed that PHCs are often located in interior areas with little to no signage and poor road access. In contrast, the SCs that were visited were located right next to main roads or highways and appeared to have at least some signage. The locations of SCs in central, more accessible areas appears to be supported by officials at the state level: "*Sub-centres should be in central locations and not in outward areas of villages*". However, given the location of the SCs and CHCs, this was resulting in people underutilizing the services provided at the PHC. With this context, it is important that services as well as the human resources at these centres are rationalized so that resource utilization is optimized. The need for geospatial mapping and rationalization of facilities also came up in a discussion at a state-level meeting with officials supporting the need for the mapping, adding that it was possible to do this given the Department's current technological capacities. Civil society representatives too expressed that rationalization is required by suggesting *"Health and wellness centres are not required everywhere. Rational creation of these facilities would be far more useful"* and that PHC strengthening will work better. Another representative reiterated this by saying that just creating HWCs without rationalization is a *"tokenist initiative"*. Instead, upgrading infrastructure and services on a need-based basis would have an actual impact.

This study strongly advises that urgent geospatial mapping (every district, every facility) be undertaken for the rationalization of location to fulfil population norms. Some published literature is already available for this, suggesting it is entirely feasible to accomplish this using available data. Furthermore, this mapping should include facilities of potential partner agencies such as the Armed Forces, ESIC and not-for-profit organizations (e.g., NGOs and Mission Hospitals). The rationalization of facilities should also ensure that the services match the current gap and demand, for instance, in access to institutional delivery, contraceptive and child health services.

Infrastructure

An official of the Government of Rajasthan suggested that the whole primary healthcare system needs to be revisited and that the problem is not one of availability but that of utilization: *"The time for bringing services to people is gone and currently the need is to bring people to hospitals"*

In line with this, he recommended that the focus shift to increasing beds at CHCs, increasing the number of CHCs, and upgrading PHCs to CHCs such that there would be at least one CHC at a maximum distance of 30 to 40 kms from any given community and that most primary care functions should then be undertaken at HWCs or SCs. All of this should be accomplished with adequate task shifting. However, this recommendation needs to be placed in perspective; the PHC is an essential component of the primary health care system and, more often than not, serves as the first point in the system where a patient meets a doctor. Additionally, the PHC provides an array of health promoting services in addition to emergency services, reproductive, maternal, and childcare services, and selected surgical procedures. In the absence of the PHC, patients would have to access these services elsewhere – at a CHC or higher tertiary care hospital or at a private facility. This point was raised by doctors and paramedics employed at the PHC; civil society representatives too supported this. Therefore, this study strongly recommends that the PHC be retained in the structure of the public health system while rationalization of HR and strengthening of CHCs is carried out. The subcentre seemed to be least specific in terms of service provision other than promotive public health functions but would come into higher relevance with the conversion to health and wellness centres as planned, especially with the addition of telemedicine services as discussed further in the telemedicine section.

In terms of infrastructure, the study team also found that while most of the centres visited by the study team had been painted and 'beautified' externally, the interiors were poorly maintained. For

instance, one of the HWC-SC we visited had been newly painted in line with HWC guidelines but had no functioning toilets; the rooms were dark and dingy, and upon discussion, it was found that some of the rooms at the facility were not even constructed fully. Similarly, at another HWC-SC, a new section had been added to the existing building and the exterior had been painted. However, once again, there were no functional toilets on the premises, the local communities had stored fodder in the front yard, and a thresher was also present on site. In fact, functional and hygienic toilets were of a concern in other facilities that were visited as well: one rural PHC of Jaipur district had broken, non-functional washrooms in the delivery room as well as for the general population, and the CHCs did not have usable toilets either.

Further looking into the infrastructure, the study found that the urban PHCs in Jaipur were situated in old buildings that require upkeep and up-gradation. A nursing officer at a U-PHC suggested that while they have all the facilities that are required such as cold chain management facility and biomedical waste management area, the building is crumbling and there is no budget to improve the structure itself. A similar observation was made at the busy Satellite hospital in Chaksu block where the hospital building did not appear to be able to accommodate the influx of patients with many patients, including pregnant women, laying in stretchers in the corridors. Additionally, most of the wards at this facility were in deteriorating condition. Therefore, it is recommended that structural up-gradation be made a priority across all facilities in the state, with a dedicated budget being made available to the facilities. In particular, the State should focus on upgrading the infrastructure of facilities that have been converted from a lower tier facility to one of a higher tier. A CHC in Karauli is one such example. Having been made into a CHC from a PHC a few months ago, the facility did not have any of the requisite infrastructure. There was only one common ward that was set up in a central area in the open air covered by a fiberglass roof, most rooms at the facility were closed, and there was no ICU and no platelet transfusion equipment. The study team's conversation with the MOIC revealed that a new building is to be constructed elsewhere to house this CHC. However, that is expected to take over a year and, in the meantime, the population of the area will continue to lack access to services that are to be provided at the CHC. The concern of inadequate equipment and infrastructure was also reiterated during the interviews; one of the study participants raised this by citing the instance of more than hundred infant deaths over a 40-day period in Kota in 2019-20.

The study also found it concerning that despite the government's push for telemedicine adoption, none of the facilities we visited actually had any telemedicine infrastructure. Proper

implementation of a telemedicine programme needs appropriate infrastructure including specialized equipment at facilities of all levels. The absence of this infrastructure could be because telemedicine services currently operate from district hospitals or higher institutions and only allow for direct patient-doctor interactions. However, as is discussed in the section on telemedicine further, this model has its shortcomings. It is recommended that facilities invest in telemedicine infrastructure, albeit rationally, looking at the utilization patterns and capacities of public health workers in the area.

Another area of concern was that most facilities, except one CHC, were lacking staff quarters on-site. This is a major problem for the doctors posted at the facilities as they often must travel long distances to get to their workplace on a daily basis. The MO at the PHC in Kothun, for instance, traveled to and fro from Jaipur every day. The lack of residential quarters on-site not only adds to the burden of doctors by forcing them to travel long distances, but also can be a deterrent to a rural posting and can encourage unauthorized absences from work. In interviews relating to the HR crisis of the state, this point was repeatedly mentioned as an impediment to posting doctors and specialists in remote/rural areas.

Finally, it was also observed that most of the visited facilities did not have a Citizen's charter on display although IEC material was available in Hindi and sometimes in English throughout. The Citizen's charter is an important mechanism to ensure transparency at the facility and so it is recommended that these be displayed at the earliest. In addition, most facilities charge a small fee – Rs. 5 to Rs. 15 – for its services and there are no boards sharing this information with patients who visit the place. This needs to be rectified as well.

Collaborating with other state agencies

One suggestion to improve access to health care, and especially to hard-to-reach areas, was to engage with the Armed Forces, particularly in border/desert areas, to provide healthcare services. Historically, such models have not just been used in war-torn areas or those with armed conflict, (Borgman et al., 2012) but also in general to provide healthcare services to civilians within the jurisdiction of the Forces. For instance, the Officer Commanding, Station Head Officer is the health officer of the cantonment and is tasked with maintenance of the health of the civilian population, monitoring of cantonment board health workers, and execution of relevant health programmes (Deswal, 2016). The Defence Forces also supported the government's efforts during

the peak of the COVID-19 waves (Sagar, 2021). During an interview with a civil society representative, it appeared that this approach would not only be feasible but also amenable to the Armed Forces as it would demonstrate assistance to civilians. This model can be used to run primary healthcare functions in these areas.

Along these lines, an official of the NHM suggested that the Railways as well as the ESI health facilities may be used to extend access in remote areas. While it is not assured that these strategies would work, the study recommends a scoping exercise and engagement with the Armed Forces, Railways, and ESI to assess the feasibility and impact of such initiatives with the goal of providing services in remote, border, desert areas .

Public-private partnerships

It is generally believed that PPPs can supplement the efforts of the government in the provision of health care. Such models can take on various forms including contracting-in or -out, joint ventures, franchising, etc. However, there is much evidence from India and globally that inadequate policy frameworks and ineffective implementation are major hindrances in the smooth and effective functioning of PPPs (Dutta & Lahiri, 2015; Nandi et al., 2021; Tabrizi et al., 2020). Experiences from implementation of PPPs indicates that successful projects also require building capacities of the public sector to monitor and evaluate the performance of private sector (Tabrizi et al., 2020).

As part of the literature review, the study looked at the PPP model that has been used in several instances in Rajasthan. Specific to Rajasthan, three broad phenomena emerged from a case series in relation to PPPs developed to extend sterilization services to rural communities. The first phenomenon is that PPPs can only address barriers in access to a limited extent. Second, the manner in which PPPs address these access barriers is highly dependent on the type of private institution. Last, the hidden agenda of the scheme was to promote private facilities rather than improving access for the most underserved populations (Neogi, 2020). An interview with a civil society representative revealed that there was a concerted push for PPPs starting 2014-15 and more than a hundred PHCs were being run in PPP mode at one point. They suggested that there is no discernible difference in PHCs run in PPP mode and those run by the government alone, adding that the increase in OPD numbers is not an actual indicator of effectiveness and that outcome-based evaluations would better serve the purpose. Some of this can be explained by the lack of

expertise among organizations selected to run the PHC; several PPP-model PHCs were taken over by organizations with little to no relationship to health or health care. Another factor could be the underpaid, underqualified workers employed under the PPP model.

In contrast, when run by organizations with strong health backgrounds, employing trained, skilled staff, this model has shown positive health outcomes, says another civil society organization. They suggest that the contracts must be prepared in such a manner that only the right organizations – those with "*health expertise and community service ideology*" – are screened. An independent panel would be required for this kind of screening. In Karauli district, a district programme officer informed us that currently there were no PHCs in PPP mode in the district, although three urban PHCs were run in this mode until recently. Other services, such as lab services that are not covered, and supply of medical gases were being implemented in PPP mode at the time of the visit.

Overall, this study recommends rational use of PPPs, with a rigorous screening and selection processes through an independent panel, in addition to regulatory frameworks that minimize profit-making and monitor health outcomes. This should be supplemented with outcome-based evaluations of projects by independent agencies.

Improving access for specifically vulnerable populations

Making recommendations for increasing access to healthcare for vulnerable populations was an expected outcome of this study. In the review of literature as well as in conversations with representatives of civil society organizations, it was found that centres being spread out far and wide was a common problem. This meant that even when centres are in line with the population norms (e.g. one PHC for every 20,000 – 30,000 population), they are too far for communities living in remote areas. One suggestion received during the interviews was that facility norms be based on 'commute time' rather than population numbers, similar to the norms for WATSAN models. For example, a PHC should be located no more than 30 minutes away from any given village. According to one civil society representative interviewed, the data to create these norms and rationalize the facilities is already available. In another recommendation from a civil society consultation for making recommendations to the Draft Rajasthan Right to Health Act, it was recommended that basic health services be made available to every citizen within three kilometres or within 30 minutes of walking distance, the full range of primary care be available within 12 kilometres, services for treatment of serious illnesses within 50 kms (one hour by transport) and

access to treatment of critical illnesses within 150 kms by fully skilled human resource with state of the art infrastructure, blood bank, equipments and delivery of services. A 24X7 ambulance service should be available to connect every home to each level of care (JSA Rajasthan, 2021).

Mobile outreach services are one of the most commonly used innovations to improve access to healthcare for vulnerable populations and have been recommended by multiple task forces despite inconsistent evidence on their effectiveness (Expert Committee on Tribal Health, 2018; Technical Resource Group for the National Urban Health Mission, 2014). The Operational Guidelines for Mobile Medical Units (MMUs) recommend their usage in both rural and urban areas, particularly in places that do not have fixed infrastructure for health. Norms for MMUs, meanwhile, are estimated according to population with relaxations allowed for tribal/hilly areas (National Health Mission, 2015). While MMUs are fully equipped units, mobile medical vans (MMVs) are smaller, have less equipment, and are better able to navigate narrow, poorly constructed roads as seen in remote areas.

The Rajiv Gandhi Mobile Medical Unit (MMU) programme was operational in Rajasthan since 2008-09, with outreach camps organized in all districts in hard-to-reach areas. The outreach services included examination, investigations, drug distribution, and referral. As of 2017, a total of 206 vehicles, the majority of which were MMVs, were operating under the scheme in Rajasthan (Ministry of Health & Family Welfare, 2021a). Information on the continuation of the scheme beyond 2018 is lacking. However, as the pandemic increased in intensity during 2020, the Chief Minister announced the (re-)launch of MMUs to ensure OPD services and basic health care for the residents of Rajasthan. According to a press release by the MoHFW dated 19 March 2021, 214 MMUs in the state are supported by the NHM (Ministry of Health & Family Welfare, 2021b) while an interview with a state-level official indicated that 260 such units were operational at the time of the interview. The essentials of this service remain the same as before - currently, the MMU/MMV is stationed at block headquarters and is sent to villages according to a schedule where it provides OPD, investigative, and referral services. Rajasthan also runs mobile surgical units and mobile blood banks but information on their operationalization is lacking and did not come up in conversations with officials. This study recommends the use of MMUs with adequate planning such that outreach services are delivered in a rational, in underserved areas. It is also recommended that the services provided through MMUs be rationalized in line with the national guidelines and that adequate HR and equipment be made available to the MMUs based on the plan for service provision.

Innovations

Other states have instituted innovations such as Haat clinics and Mohalla clinics to increase access to services for the most vulnerable. Chhattisgarh's Sukma district is one with a high proportion of tribal communities, mostly from the Gond community, living in difficult terrain and plagued by Left Wing Extremism (The Chhattisgarh Story, 2018). As such, accessing healthcare services was difficult for the population despite availability of services in the district. To this end, the district administration developed the idea of 'Haat Clinics' where multidisciplinary teams from the departments of health, women and child development, education, and others would congregate at the weekly markets or haats. In terms of healthcare services, the haat bazaar clinics have specialists, multipurpose workers, and a staff nurse who provide services in dedicated spaces at the bazaar location. The main services provided here are routine tests and diagnostics, in addition to disbursement of medicines. This initiative saw great success immediately after implementation with over 10,000 OPD patients served in just four months (The Chhattisgarh Story, 2018)

Delhi's Mohalla clinics, meanwhile, are an initiative to increase access to primary health care by bringing services closer to people, particularly the urban poor. A secondary objective was to reduce the burden on Delhi's tertiary care hospitals. Similar to the haat clinics, the Mohalla clinics provide free consultation, free diagnostics, and free medicines with one doctor, one ANM, one pharmacist-cum-phlebotomist, and one lab technician posted at the centre. The personnel receive remuneration on a per patient basis (Hazarika, 2015). A preliminary evaluation showed that Mohalla clinics were successful in improving accessibility, affordability, availability of services, and patient satisfaction Additionally, as the Mohalla clinics became the first point of contact with the health system (similar to rural sub-centres), displacing polyclinics and dispensaries at the second tier of healthcare, they have been successful in reducing patient flow to tertiary care centres as well (Sah et al., 2019).

The Janta Clinic initiative by the Government of Rajasthan, currently implemented in Jaipur, appears to be similar to the Mohalla clinics in its objectives and implementation. However, the development of such clinics needs to be ramped up in line with the need of communities. Additionally, the human resources at these facilities include one doctor, two nursing staff, one pharmacist, and one helper. However, considering that the Janta clinics are meant to provide laboratory and diagnostic services as well, additional human resources might be warranted.

Further, as the State is looking to fund these clinics through Corporate Social Responsibility funds going forward, the sustainability of this must be assessed as well.

Recommendations

KEY RECOMMENDATION: URGENT GEOSPATIAL MAPPING (EVERY DISTRICT, EVERY FACILITY) REQUIRED TO ENABLE RATIONALIZATION OF LOCATION TO FULFIL POPULATION NORMS

Other recommendations:

- Location
    - Geospatial mapping of facilities by location.
    - Geospatial mapping should include facilities of potential partner agencies such as the Armed Forces, ESIC and not-for-profit organizations (e.g., NGOs and Mission Hospitals).
    - Rationalization of facilities to also ensure that the services match the current gap and demand, for instance, in access to institutional delivery, contraceptive and child health services.
- Infrastructure
    - Funds be made available for structural improvement and infrastructure upgradation, including for the development of staff quarters on-site.
    - Facilities upgraded from a lower to higher tier require urgent funding to upgrade infrastructure in line with norms.
    - High priority be accorded to making basic infrastructure, such as toilets, functional at all facilities.
    - In the interest of transparency, user fees at any public health facility be made obvious through conspicuous signage. Additionally, wherever missing, Citizen's charters be displayed prominently.
- Collaborations and PPPs
    - Scoping exercise and engagement with Armed Forces, Railways, ESI to provide services in remote, border, desert areas
    - Limited and careful use of PPPs in healthcare with stringent screening and selection, conducted by an independent panel.
    - Not-for-profit agencies with public health expertise and experience to be given preference.
- Improving access for specially vulnerable populations and innovations

- Redefine norms for facilities on the basis of commute time and distance.
- Adherence of mobile outreach services with national guidelines and investments in HR and equipment.
- Scoping exercise to determine utility and feasibility of 'Haat' clinic model in remote areas of Rajasthan.
- Rigorous evaluation of Janta clinics to determine adequacy of HR, utilization patterns, outcomes, and cost-effectiveness, followed by scale-up through a sustainable financing model.

Health Services and Schemes

The health services provided at public facilities, as well as the quality and efficiency of said services often determine whether patients choose these facilities over private facilities that provide quality services, albeit at a higher cost (Rout et al., 2021). The results of the recently released National Family Health Survey – 5 (NFHS-5) reveal that utilization of public health facilities has grown in comparison with that five years ago (NFHS-4). For instance, institutional births at a public health facility went up from 63.5% in 2015-16 to 77.0% in 2020-21. Also encouraging is that average OOPE per delivery in a public health facility decreased by about 31%, from Rs. 3,052 to Rs. 2,102 during this period. A similar promising trend was observed in the proportion of children aged 12-23 months who received most of their vaccinations in a public health facility – 94.4% versus 98.0% in 2015-16 and 2020-21 respectively (International Institute for Population Sciences, 2020).

Unmet health needs

This is by no means any reason to rest satisfied with the level of health care needs being currently met as also evidenced by the recent data from NFHS 5. For example, the total unmet need for family planning is still high at 7.6% though lower than 9.4% for India overall, more so in rural areas (7.8%) in comparison to urban areas (6.9%). Meanwhile, the unmet need for spacing methods in Rajasthan was 3.7%, only slightly lower than India's average of 4%. Maternal care indicators also suggest an unmet need for antenatal care services with just over 55% having had four antenatal visits during their pregnancy. This is lower than India's average of approximately 58% (International Institute for Population Sciences, 2020). Further, the study found that about three out of every ten children (~30%) in Rajasthan under the age of five years that had fever or symptoms of an acute respiratory illness were not taken to a health facility. This indicates a need for more accessible services to manage childhood illnesses. The NFHS-5 fact-sheet also gives some insight into the nature of disease burden in Rajasthan. Hypertension appears to be more prevalent than diabetes and both forms of NCDs are more common among men (International Institute for Population Sciences, 2020). Although the prevalence is less than that in India as a whole, experts have warned of the 'escalating burden of NCDs' and expressed a need for robust, resilient health systems to combat this changing nature of disease burden (Arokiasamy, 2018). It is expected that the HWC's focus on NCDs and 'wellness activities' will be able to positively impact this trend.

Paradoxical over-medicalizations

However, paradoxically, the review of literature also indicated an overmedicalization of services in the public health system, not just in Rajasthan but in the country as a whole. Most authors use the trend of increasing caesarean deliveries as an example, but a prescription audit based case study from Rajasthan also found that approximately 36% of the prescriptions were unjustified or inappropriate when assessed against the available documentation (Das et al., 2021). The experience during the field visit echoed this scenario: the study team's observation also included an overmedicalization of the services in the health system, a finding that was mirrored in the demands of the community. This study found that at most health facilities, the focus was on dispensing medication, sometimes even in the absence of an attending doctor. This could be because of repeated absences of the MO coupled with an emphasis on obtaining medicines by the patient leading to the pharmacist on duty supplying the medicine with little oversight. To investigate whether such cases are commonplace and to identify instances of overprescribing, it is recommended that an annual 'surprise' prescription audit be conducted by a regulatory body. Further, considering that such practices could come at a heavy monetary cost to the government, this study recommends a costing study to assess the actual cost of the current practices. Lastly, capacity building of all doctors – contractual and permanent – on rational drug use and standard treatment protocols is strongly recommended.

Quality

Furthermore, the quality of services itself remains a concern. The literature review yielded indications that the quality of care at government health facilities remains a major barrier to utilization of services by residents of Rajasthan (Patel & Chauhan, 2020), particularly among the most vulnerable (Thakur & Singhal, 2016; Uppadhaya et al., 2017). The quality of services at public health facilities also came up in the community meeting. Individuals in Sasedi village in Karauli suggested that the services at government facilities tend to be of poorer quality as compared to private healthcare facilities. One of the suggestions to improve the quality of services at all levels is supportive supervision. There is ample evidence from around the world to suggest that having a supportive supervision mechanism improves the quality of services, especially in the case of community health workers. It is recommended that the supportive supervision mechanism be institutionalized such that every level receives some support, partly remotely and partly in-person, from a higher-level body. For instance, interviews at the state-level and with CMHOs indicated

that they find field visits combined with supportive supervision to be an excellent tool in improving quality of services. A timeline of field visits for all programme managers, CMHOs, and other personnel would add value to a supporting supervision and monitoring mechanism. Additionally, much of the current monitoring mechanism involves video conferencing between the 'implementers' and the 'supervisors', which is mostly happening on an ad-hoc basis. This study recommends that specific days be allotted for video conferencing so that the workplan of district, block and village level implementers can be more structured. Please refer to the sub-section on monitoring of human resources for health in the section programme management for more details.

The study also identified other issues that might have contributed to poor quality of services across Rajasthan. These include inadequately defined supportive supervisory mechanisms, incentives for recruitment and retention for MOs via relaxation of marks for NEET-PG entrance, ACRs not related to outcomes, defunct VHSNCs, and non-institutionalization of CBM mechanisms. These are discussed in the monitoring and evaluation sub-section in programme management.

Acceptability

Acceptability of services is another important factor determining utilization of services. During the visits, it was found that very few patients avail of IPD services even at CHCs. For instance, at one of the CHCs that was a 30-bedded facility, an MO revealed that the patients rarely consent to stay the night. Instead, they prefer day-care services and travel to and fro from their homes for the duration of the treatment. However, the same MO suggested that it would be helpful to increase the number of beds at the facility. They suggested that this would help them provide care to more number of daycare patients (IPD), ultimately increasing utilization. This appeared to be in line with the study team's observation. At the time of the visit, all the beds at the CHC were occupied. This is further evidence in support of rationalization of services. In line with this, despite most visited PHCs having the infrastructure to conduct institutional deliveries, personnel at the PHCs were emphatic that women rarely choose their facilities for institutional deliveries, instead preferring private facilities or other avenues. Their preference depended upon geographical access and the existence of doctors and specialists at the facility. This was echoed by personnel at other health facilities as well. Therefore, the question of what services are to be envisioned/placed at which level arises as important, more so in the case of institutional deliveries.

Institutional deliveries

One of the biggest challenges that arose from the information gathered for the utilization of facilities related to the plan for institutional deliveries: it was clear that very few deliveries were occurring at SC/PHC level and most were located at the level of the CHC. Investigation of the reasons revealed a connection with the skills of the delivering doctor and in some instances the delivering ANM, as well as faith in the institution for providing services for potential complications. This health-seeking phenomenon is aided by the fact that the road network is vastly improved even in rural areas and people are able to get to CHCs more easily. However, there are large out of pocket expenditures on transportation as the ambulance service is not able to cope with the volume of deliveries. The study team's understanding of community preference for hospital-based deliveries (as compared to SC/PHC) was confirmed by information gathered from the community meeting and conversations with patients. Labour rooms were varied in terms of adequacy of infrastructure – some did not have neonatal corners. Almost all did not have decent toilet facilities.

Given the circumstances of a historical shift that is partially driven by health seeking behavior in terms of aspiration as well as quality of available services, it does not seem practical to enforce any particular level of institutional delivery without ensuring visibly high-quality HR, labour rooms and transportation facilities. It is best left to local planning at the level of the CDMO, depending upon surveys to establish what difficulties and OOPEs the community are facing. In other words – a problem solving approach rather than a policy decision.

Public health functions

Primary health care is a pillar of a good health care model, particularly in low-resource settings. There are considerable evidence that health care models that appropriately address causes or factors leading to ill-health, and identify and manage diseases early on, deliver significantly better health outcomes at the same or lower expenditures as compared to models that focus on managing diseases once they have already occurred through a hospital-based approach (D. Singh et al., 2021). During the interviews with state-level officials, the study team found a common strong push for clinical care, strengthening and expanding CHCs, and a focus on tertiary care. This is alarming in

the context of the health disparities and an overburdened tertiary care system that can be seen in Rajasthan.

To some extent, the strengthening of SCs and conversion to HWCs, as well as the increased focus on NCDs, is a positive thing. However, the recognition of PHCs as inherent to the delivery of primary health care is missing. In fact, another civil society member posited that even the services at HWCs need to be looked at with a primary health care lens, saying *"[the] basic missing link is that medical services take predominance over health. [Efforts] will go towards management rather than prevention and promotion. Where are the wellness activities? The HWCs are more focused on the medical services and drug distribution rather than health care. We need more household activities rather than facility-based activities in order to 'improve health'"*.

Conversations with officers at the facilities as well as with the community suggested that community-based work, such as NCD surveys or dengue surveys, are the major tasks performed by community health workers at PHCs and SCs/HWCs. This came up in discussions with MOs at the urban as well as rural PHCs visited by the study team – ANMs and ASHAs from the urban PHCs were mostly engaged in a dengue survey in Jaipur, courtesy of an ongoing outbreak, and the ANMs at the HWCs were engaged in NCD surveys in their area. Records of these surveys were maintained in almost all the cases with ANMs able to provide the data to the researchers. The team also observed a student-led health education campaign – mostly related to dengue – being organized by one of the urban PHCs. The discussions with ANMs at HWC-SCs and at least one CHC suggested that health promotion is an important component and that personnel are also involved in ARSH activities, particularly health education. However, the quality and effectiveness of this health education is poor, especially for vulnerable populations, suggests one civil society representative.

This study recommends that primary health care be made a priority for the state and that PHCs be strengthened through a strong emphasis on primary health care, rationalization of services, especially institutional deliveries, and the introduction of telemedicine infrastructure [figure 3]. If institutional deliveries are to take place at PHCs, it requires adequate and appropriate human resources and infrastructure. Similarly, if locally it is more appropriate to position institutional births at CHCs, it requires a corresponding improvement in ambulance infrastructure, something the study team did not find during the field visit. [Please refer to the sub-section on institutional births and the sub-section on telemedicine for more details.]

State-specific schemes and programmes

Rajasthan has several innovative schemes that seek to address health inequities in the population. According to district-level officials who participated in the study, these special schemes have achieved high success in increasing utilization of public health facilities, reducing OOPE, and improving health outcomes among those belonging to the lower socioeconomic categories. The Mukhyamantri Nishulk Dawa Yojana (MNDY) is one such scheme. Started in 2011, the main objective was to reduce out-of-pocket expenditures on medicines. As of November 2021, there are 714 drugs, 181 surgicals, and 77 suture materials that are available at facilities at no cost through this scheme. The mechanism of the scheme is such that the Rajasthan Medical Services Corporation procures the drugs centrally, but the items are supplied directly to the district drug warehouses. The procurement follows a need-based mechanism, based on a computerized software – e-Aushadhi. All facilities, from SCs to district hospitals, place their requirements through this software.

An evaluation of MNDY by Vashistha et al. found that the scheme worked well in reducing OOPE among patients, especially among those from low-income families (Vashistha et al., 2018). Another evaluation by the Public Health Foundation of India also found that following the implementation of the scheme, medicine supplies increased manifold, as did the number of patients visiting public health (Selvaraj et al., 2014). These findings were supported by the visits to the health facilities. The study team found that all of the visited facilities had the correct number of drugs in adequate quantities as prescribed by the MNDY guidelines. However, it must be noted that in at least one of the PHCs visited in Jaipur, the consulting doctor prescribed medicines that were not available at the facility. The patient was then directed to procure these medicines elsewhere. However, the Nursing Officer at the facility suggested that in such cases, the patient is usually directed to visit Jaipuria Hospital where the medicine would be available. Nevertheless, it adds another trip entailing costs and effort even if warranted. In this particular case, the alternative drug was available on-site and could have been prescribed.

Overall, all of the facility personnel who were interviewed were confident that the scheme was beneficial to patients and was particularly helpful in ensuring that patients of chronic illnesses continued to have access to medication. However, it is recommended that all attending medical

personnel be clearly instructed to not prescribe drugs from outside the formulary unless it is essential. Prescription audits and spot checks can be instituted as part of the monitoring mechanism for this. Ensuring this may have distinct positive outcomes for OOPE and satisfaction with the service. A public education programme is urgently needed to cut back on the current irrational demand for drugs and dependence on drugs by the community at large for illnesses and conditions that are self-limiting (such as the common cold) or need preventative or lifestyle changes (such as obesity related diabetes, or osteoarthritis) or supportive services such as physiotherapy.

The interaction with community members revealed that while there is usually no issue in availing medicines under the scheme, many of them felt that the "*medicines didn't work*". They were then inclined to visit private hospitals and doctors to avail medication against high costs; these new medicines, they believed, provided adequate relief against their ailments. This indicates, among other things, a lack of faith in the public health system and the medicines provided at public health facilities. This is especially true in cases where patients were undergoing consultations for serious chronic illnesses such as Silicosis that are essentially not amenable to cure but require a high level of supportive care. This too requires the availability of multidisciplinary care including physiotherapy and a process of dialogue with the affected community so that they might understand the limitations of medical management, recourse to specialized medical services when warranted, as well as available options for improving the quality of life.

One other such scheme is the Mukhyamantri Nishulk Jaanch Yojana (MNJY) – the free diagnostics scheme. Under this scheme, 90 tests would be provided free of cost at Medical Colleges, 56 at District Hospitals, 37 at CHCs, and 15 at PHCs. The scheme seems to have been just as successful as the MNDY at alleviating OOPE. At the facility visits, the study team observed that most facilities had the provisions to undertake the requisite tests described under the guidelines. However, in cases where the facility had been 'upgraded', this was not the case. The CHC in Karauli demonstrates this fact. This facility had been upgraded from a PHC to a CHC about six to seven months prior to the visit. However, the infrastructure at the facility had not been upgraded at all as a new structure was meant to be constructed elsewhere. Therefore, at the time of the visit, the CHC was still able to provide only the 15 tests that are available at PHCs. Another issue noted during the facility visit was that some essential tests, such as that for the diagnosis of Dengue, were not available at the PHC level. Considering the periodic outbreak of dengue in these areas, it is

recommended that PHCs be equipped with such tests under the MNJY and that the overall scope of the scheme be expanded.

The Bhamashah Swasthya Bima Yojana (BSBY) was a government sponsored insurance scheme in Rajasthan, similar in nature to the Mukhyamantri Chiranjeevi Swasthya Bima Yojana - an extension of the Ayushman Bharat scheme with the target of achieving universal health coverage. Launched amid the COVID-19 pandemic in 2021, the scheme provides a coverage of Rs. 50,000 against common illnesses and Rs. 4,50,000 against serious illnesses. Beneficiaries of the National Food Security Act (NFSA) and Socioeconomic Caste Census 2011 are eligible for the Chiranjeevi scheme at no extra cost. However, all other families can enroll under the scheme by paying a premium of Rs. 850 per year. Beneficiaries under the scheme can avail treatment at any of the 765 state government hospitals and at more than 300 empaneled private hospitals. About 1,576 packages and procedures have been described by the scheme including treatments for cardiovascular diseases, cancer, COVID-19, and kidney diseases. The scheme also covers ailment-related costs that arise up to five days before and up to 15 days after admission. Individuals who had availed of the scheme or of BSBY earlier strongly agreed that it was useful, that the process was simple, and that they did not have any OOPE related to their treatment. This is highly encouraging and reinforces the need to expand packages in a rational manner such that more people receive the coverage they need. One suggested area of improvement is in terms of transparency. None of the individuals who had availed of the scheme knew of the amount charged against their insurance coverage so had no inkling of the remaining amount of coverage. Nevertheless, the community expressed satisfaction that they are able to go to private hospitals which they seemed to prefer; a point also raised by many of the officials and doctors interviewed.

However, during the interviews, senior officials felt that private institutions were escaping responsibility by taking on a limited set of packages and essentially cherry-picking patients. They recommended that government be firm on the indivisibility of the packages that they must accept if they have to be part of the scheme. However, this might leave a gap in services that are currently dependent upon select private services. Similar evidence regarding the profit-making priorities of the private sector were mirrored in an evaluation of the BSBY. It raised several concerns including high OOPE at empaneled private hospitals, surmising that high risk and less informed patients tended to have higher OOPE. Further, the researcher found that less than half of the higher public subsidies were passed through to patients in the form of lower OOPE (Jain, 2019). It is postulated that further strengthening of the public health system can be the most cost-effective as well as

high quality mechanism to offer comprehensive and universal services, leaving only very select services to require the intervention of the private sector. Improving quality is highly likely to ensure the shift in demand, which is demonstrated by the observation that people from all socio-economic classes were seen to attend well-functioning public facilities as noted above as well as the data from the NFHS 5 suggesting greater utilization of public health care services. This trend is only going to increase as the costs of health care are rising on a daily basis and the private sector is showing reluctance to enter PPPs at current rates and packages, which would result in still higher health care expenditure per capita to the state if this system is to be made sustainable. Further, few formal private services exist in remote rural areas and there would be no short cut to public provisioning for these. Some contracting-in of private doctors might assist the process of overall strengthening of the public health services, as well as other methods of ensuring adequate human resources, which are discussed in a separate section [refer recruitment sub-section under human resources for health].

Civil society representatives raised a separate concern related to insurance coverage in Rajasthan: exclusion of poor households for lack of identity cards. This does not seem to be a case limited to Rajasthan. In fact, most studies of publicly funded health insurance in India have commented on the exclusion of eligible households in these schemes (Ghosh, 2018; Vitsupakorn et al., 2021). In Rajasthan, the Jan Aadhar number is a unique identifier provided to each individual. However, the onus of proving their identity is on the individual themselves. *"The Jan Aadhar process also requires seeding of data from many different sources for verification"*, leading to several exclusions, suggests one civil society member. For this, and other entitlements currently dependent upon biometric identification, the considered recommendation is to allow flexibility for proof of identity allowing for non-biometric identification as well as identification that does not entail proof of residence in the case of migrant, slum and homeless populations, such as smart cards, recommendations by processes at Panchayat /DM level etc.

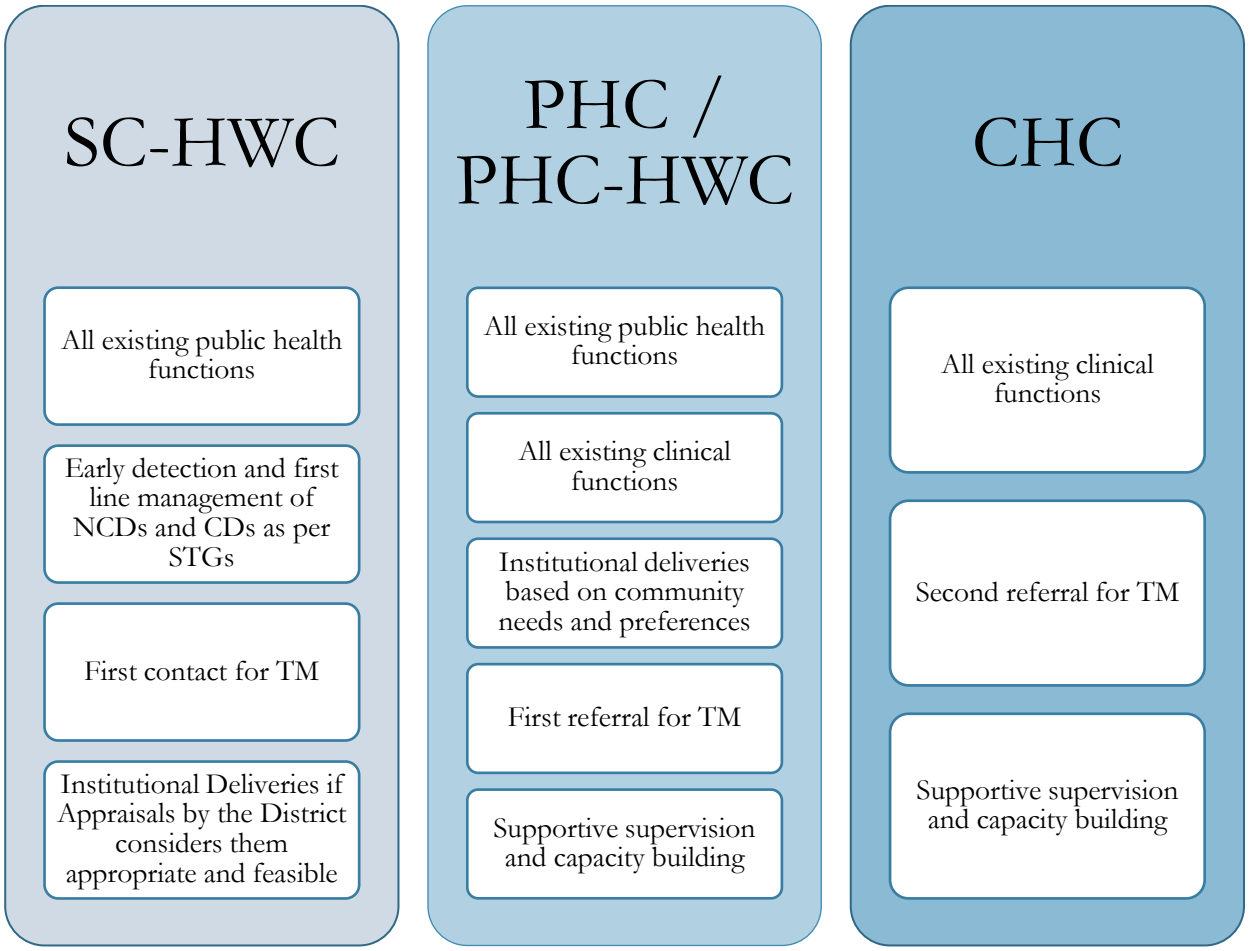
Suggested approach to rationalization of facilities and services

In some sense, the functionality of CHC/satellite hospital seems to have clarity of vision as well as implementation, while there is a difference of opinion on the relevance and functions of PHCs and SCs. Many people interviewed were of the view that PHCs need to be disbanded and absorbed

into CHCs, while some disagreed. Nonetheless, it was clear from the situation on the ground that it would not be possible to create a top-down instruction for the relationship between SCs, PHCs and CHCs and the services therein due to the irregularity that has occurred historically, depending upon distances, quality of services, aspirations etc. in other words, the logical, rational, linear relationship originally envisaged between these facilities has remained largely theoretical, with the actual situation on the ground often being very different as it accommodates the logic of the constraints within which people are using these services, all of which may be described by 'access' and 'quality'. However, the study suggests that there is a pathway to reintroduce rationalization in at least two different ways that would potentially result in better access to people, better management and more efficiency.

The first of these is the process of geospatial rationalization as mentioned above. The study team suggests the use of telemedicine as the second important way, as discussed in the following section.

Figure 3: Recommended institutions and their functions for non-emergency care



Note: TM=telemedicine, NCD=non-communicable disease, CD=communicable disease, STG=standard treatment guidelines

Telemedicine

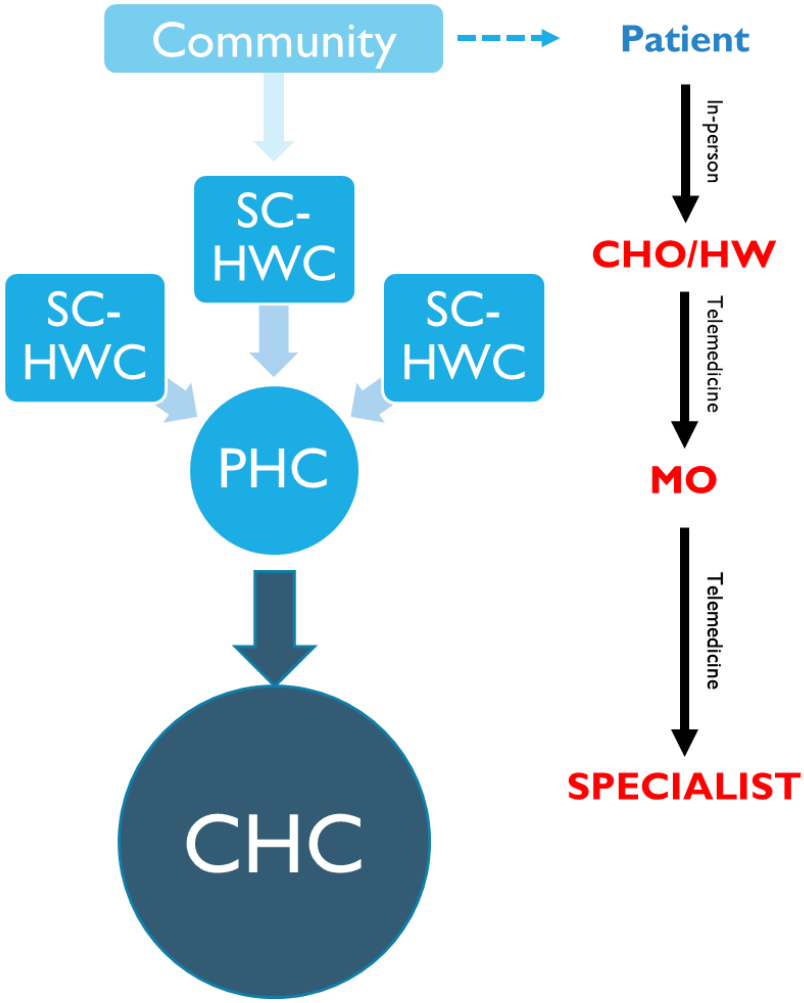
The use of telemedicine saw a sharp rise globally during the COVID-19 pandemic (Hincapié et al., 2020). Defined as "the delivery of healthcare services, where distance is a critical factor, by all healthcare professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of healthcare providers, all in the interests of advancing the health of individuals and their communities" (Combi et al., 2016). However, for optimal utilization of resources – human and financial, telemedicine must be properly integrated into the health systems. This point was brought up in all the interviews with civil society and government officials; it was categorically stated that telemedicine cannot be a standalone policy.

At present, telemedicine is provided through e-Sanjeevani under the aegis of the National Health Mission (Dash et al., 2021). In addition, e-Sanjeevani currently works by allowing the patient to directly consult with the doctor through virtual OPD in selected slots. A limited number of doctors, specialists particularly, are available to provide teleconsultations to the patients, leading to long waiting times. Furthermore, with direct patient-doctor consultations, there might be little to no physical examination of the patient, leading to misdiagnosis and inappropriate/inadequate treatment. This came up as a potential challenge in the interviews with civil society representatives as well. The literature review found that the Ayushman Bharat guidelines for telemedicine services at HWC-SC also do not specifically provide guidance on how to conduct physical examinations virtually. With the context of Rajasthan's demographics, it is highly recommended that the first consult between the patient and the registered medical practitioner (RMP), i.e., doctor or health worker be physical, followed by teleconsultation to higher levels as required. Of the four types of interaction described in the MOHFW's telemedicine practice guidelines (patient-RMP, caregiver-RMP, RMP-RMP, health worker-RMP), the study specifically recommends avoiding direct patient-RMP teleconsultation to the greatest extent.

Additionally, this study emphasizes the need for a structured model where the HWC-SC is the spoke and the PHC acts as the first hub for telemedicine consultations (refer figure 4). At the HWC-SC, telemedicine should be provided according to standard operating procedures, protocols, and STGs like those developed for IMNCI. This first requires a separate room at the HWC with OP hours. The first physical consultation might be undertaken by the CHO who will require capacity building on telemedicine as well as the SOPs, STGs, and protocols.

The CHO, upon completing the history and physical examination will contact the MO at the first referral point – the PHC. Thus, the MO has the results of the examination including vital signs, SpO_2, blood pressure, height, weight, haemoglobin, etc to assist them to recommend a treatment course, along with direct access to the patient for further history taking. The MO would also be able to direct examination under video supervision. To undertake this, the PHC will also require a dedicated telemedicine room, as well as slots for doctors' appointments and their presence.

Figure 4: Recommended model for telemedicine services



Some special situations and recommendations in the context of this model may be as follows:

- For any new diagnosis of NCDs, one teleconsultation to be undertaken within the first 15 days, followed by a bi- annual consultation.
- All adult red flags be reviewed periodically.
- Review of pregnant women at the time of registration, followed by once every trimester in the absence of red flags.
- Periodic review of children with severe acute malnutrition, growth faltering, and red flags.

The second point of referral will be from the doctor/MO to the specialist at the CHC for complicated cases as a preliminary to transporting the patient if required. This is related to the 'forward triage' concept that is particularly useful during times of crisis such as disasters and epidemics. The whole process involves determining a patient's condition before the patient arrives

at the emergency department. In the case of this telemedicine model, it would amount to the MO consulting the specialist on management advice and also apprising them on the patient's condition, treatment needs etc. prior to a referral to the higher-tier facility. This will require dedicated space with the necessary infrastructure at the CHC.

One high-level government official who was interviewed expressed concern that CHCs are already overburdened and would not have the bandwidth to accommodate telemedicine needs of lower tiers of the health system.

It is recommended that a calendar of doctor availability (on rotational basis) be developed at the CHC level with clinical specialists providing telemedicine services in periodic, convenient, fixed slots. This study suggests that a dedicated team is likely to get frustrated with simply doing telemedicine full time and also the patient needs are unlikely to be integrated well into the entire CHC system unless the doctors are common. Having a rotating system will also allow for better task-management among the specialists. Combined with the 'forward triage' concept, fixed slots for teleconsultations will prevent overburdening the CHC-level facilities.

Another area of concern that emerged out of the literature review was one of adequate training and capacity building for telemedicine. In a global study of healthcare providers that used telemedicine for maternal care provision during the pandemic, about 20% had little knowledge of the guidelines in their respective country (Nittari et al., 2020). Additionally, educating clinicians on telemedicine that helps them understand the shifts in clinical workflow, how to use technical platforms effectively, how to perform examinations virtually, and how to resolve technical glitches was found to be central to successful implementation of telemedicine programmes (Hincapié et al., 2020; Kho et al., 2020). Cultural influences and styles of communication were also required themes of training. In addition, all personnel involved in telemedicine must be apprised of the SoPs, STGs, and protocols being used at their respective level of health care. It is recommended that periodic capacity building activities be undertaken with the support of the SIHFW or other expert organization, and that such capacity building be practitioner oriented.

It is interesting that AIIMS, Jodhpur is currently undertaking studies on the impact of telemedicine usage on healthcare outcomes in particularly vulnerable tribal groups and other marginalized communities. This model is different from the one we propose in that there is direct doctor-patient interaction and there are no fixed slots for specialist teleconsultations. Parallelly, AIIMS-Jodhpur

is committed to setting up a functional, sustainable telemedicine centre in Sirohi district. The evaluations of these projects are awaited.

Despite the considerable support telemedicine has garnered in the last few years, one of the experts we interviewed offered some guidance: *"Strengthening primary healthcare and gateway functions is more important than telemedicine alone if we want to change the health system. This will also help in reaching out to vulnerable populations"*. At the same time, the study team brings to attention the ethical considerations in the use of telehealth, namely those of informed consent, patient privacy, data storage and usage, disparities in internet access, physician malpractice, and liability. The study team, along with numerous authors, recommends that such concerns be resolved by instituting policies and regulatory frameworks with clear, specific guidelines on how to deal with these issues (Kuziemsky et al., 2020; Nittari et al., 2020). The Digital Information and Security in Healthcare Act (DISHA) in India has the potential to address many concerns regarding data safety and confidentiality.

Recommendations

KEY RECOMMENDATION: REVISIONING OF THE HEALTH SYSTEM: RECREATING RELEVANCE FOR THE THREE-TIERED SYSTEM KEEPING PUBLIC HEALTH SERVICES, INCLUDING TELEMEDICINE, IN MIND

Other recommendations:

- Broad services
    - Geospatial mapping of services per location
    - Context-based rationalization of services for institutional deliveries
    - Telemedicine, as detailed further, can be one approach to rationalization
    - Supportive supervisory mechanism to be instituted at all levels with periodic field visits
    - Incentive of relaxation in cut-off marks for PG entrance be linked to performance
    - ACRs to be linked to outcomes and have performance-based indicators
    - Annual 'surprise' prescription audit of a proportion (10%) with detailed, disaggregated analysis of prescribing practices
    - Restrict unwarranted prescriptions for medicines that are not available under MNDY
    - Capacity building of all personnel on rational prescription
    - Development of SoPs, STGs, protocols and capacity building on the same
    - Participatory, decentralized planning and monitoring mechanisms to improve quality and acceptability
- State-specific schemes and programmes
    - Expansion of the scope of MNDY and MNJY
    - Quick upgradation of scheme-related equipment and infrastructure for upgraded facilities
    - Stricter regulation of private sector in relation to the insurance scheme to ensure adoption of all packages and discourage cherry-picking
    - Strict monitoring of OOPEs within the scheme
    - Strengthen public health facilities as a more cost-effective, rational approach to service delivery, especially in rural areas

- Allow flexibility for proof of identity allowing for non-biometric identification, identification that does not entail proof of residence in the case of migrant, slum and homeless populations

- Telemedicine
  - Only health worker-doctor or doctor-doctor teleconsultations.
  - Continuity of care from point of entry
  - First consultation should be physical
  - Permanent infrastructure and equipment at all facilities meant to provide telemedicine
  - Fixed slots of doctors and specialists by rotation
  - Development of STGs, SOPs, protocols
  - Capacity building of personnel at ALL levels
  - Ethical considerations of telemedicine addressed

Human Resources for Health

This section of the report discusses the status, gaps and challenges of human resource for health in Rajasthan and recommendations for policy arising from the study. The findings are based on the discussions with key persons and review of secondary literature including government documents, reports and articles. A field visit was also undertaken to examine conditions at the facility level. During the field visit, facility observations were undertaken, and interactions were held with key functionaries.

Norms and Standards

Human resources form the backbone of the health system. The mandate of Universal Health Coverage (UHC) is highly dependent on adequate and efficient human resources at all levels of health care and several committees and experts have emphasised the importance of development and deployment of health human resource to achieve positive health outcomes. Early recommendations by the Bhore Committee in 1946 were detailed in this regard and remain relevant. The report in the Health Survey and Development Committee (Bhore Committee) envisaged a targeted approach for human resource for health (HRH) placement based on population with PHC for 40,000 population served by 35 health personnel including two doctors (Bhore, 1946). Such norms have been reiterated by several other committees like the Kartar Singh committee in 1975 that envisaged the presence of one male and one female health worker each for 3000-3500 population (Visaria, 2010). The High Level Expert Group (HLEG) on UHC recognised the comprehensive and critical recommendations made by previous committees and emphasised the rationalisation of human resource based on population and geographical spread.

The World Health Organisation (WHO) Joint learning Initiative (JLI) report on HRH (2004) established a threshold of 25 health workers (doctors, nurses and midwives) per 10,000 population (World Health Organization, 2011).WHO also recommends a standard ratio of 1: 1000 (doctor to population). Meanwhile, the National Rural Health Mission (NRHM) launched Indian Public Health Standards (IPHS) in 2010 laying down national staffing norms for each level of public health facilities. The current version in use is the IPHS 2012 guidelines. According to the norms laid down, the nation is committed to providing a health sub-centre for every 5,000 population, a primary health centre for every 30,000 population, a community health centre for every 120,000 population and 100 to 200 bedded district hospital for every 1 million population. In tribal areas,

the density is increased to a sub-centre for every 3000 population, a PHC for every 20,000 population and a CHC for every 80,000 population. For each of the health facilities listed above, the human resources norms have also been laid down based on the type of service each facility is expected to deliver. The table below provides the details of staffing norms at rural health care facilities.

Table 3: Staffing norms at health sub centre, primary health centre and community health centre as per the IPHS 2012 guidelines

Position	**Required**
*Health sub centre**	
ANM	1
Health worker (M)	1
Sanitary worker	1
Primary health centre	
Medical officer-MBBS	1
Medical officer – AYUSH (Desirable)	1
Accountant cum Data Entry Operator	1
Pharmacist	1
Nurse-midwife (Staff-Nurse)	3
Health worker (F)	1
Health worker (M)	1

Health Assistant. (Female)/Lady Health Visitor	1
Health Educator (Desirable)	1
Laboratory Technician	1
Cold Chain & Vaccine Logistic Assistant (Desirable)	1
Multi-skilled Group D worker	2
Sanitary worker cum watchman	1
Community health centre	
Block Medical Officer/Medical Superintendent	1
Public Health Specialist	1
Public Health Nurse (PHN)	1
General Surgeon	1
Physician	1
Obstetrician & Gynaecologist	1
Paediatrician	1
Anaesthetist	1
Dental Surgeon	1
General Duty Medical Officer	2

Medical Officer – AYUSH	1
Staff Nurse	10
Pharmacist	1
Pharmacist- AYUSH	1
Lab. Technician	2
Radiographer	1
Ophthalmic Assistant	1
Dental Assistant	1
Cold Chain & Vaccine Logistic Assistant	1
OT Technician	1
Multi Rehabilitation/ Community Based Rehabilitation worker	1
Counsellor	1
Registration Clerk	2
Statistical Assistant/ Data Entry Operator	2
Account Assistant	1
Administrative Assistant	1
Dresser	1

Ward Boys/Nursing Orderly	5
*supported by ASHA worker	

In the urban areas, the urban primary health centres (U-PHC) have been set up with the core objective to achieve equity, inclusivity, responsiveness, efficiency, and effectiveness in delivering primary health care. It is envisaged that the care would be delivered through U-PHC as well as outreach activities by ensuring door to door visits. The aim is to provide comprehensive primary health care to the community through the U-PHCs to achieve and maintain an acceptable standard of quality of care through optimal utilization of resources. The centre is expected to provide integrated reproductive, maternal, newborn, child & adolescent (RMNCH+A) health services and other services under national health programmes and will also ensure referral linkages.

Table 4: Staffing norms at the urban primary health centsre

Positions	**Number**
MOI/C	1
2nd MO (part time)	1
Nurse	3
LHV	1
Pharmacist	1
Lab Technician	1
ANM	3-5
Public Health Manager/ Mobilization Officer	1

Support Staff	3
M & E Unit	1

The Report (and Recommendations) of the Technical Advisory Group for National Urban Health Mission mentions that there is a need to have minimum standards for HR deployment to ensure its implementation and monitoring. HR norms must be responsive to caseloads, so in areas with more patients, more health providers may be deployed. Minimum skill sets as measured and periodically upgraded would also be the norm. This study endorses these recommendations as well.

In Rajasthan in the urban areas, Janta clinics has been set up. The staffing norms in Janta clinic comprise one doctor and two ANMs. However, owing to the fact that Janta clinics are relatively new, it is difficult to assess whether these HR are adequate or not.

Status and gaps

In the last fifteen years, Rajasthan has witnessed a substantial increase and upgradation of health facilities at all levels resulting in 13566 HSCs, 2344 PHCs, 579 CHCs in rural areas and 377 UPHCs and 16 Janta clinics (12 in Jaipur & 4 in Jodhpur) in urban areas. However, the availability of human resource at all levels is one of the key prerequisites for efficient functioning of this expanding health system.

On the whole, it was clear from the interviews held with the key informants, the literature review and the observations through field visits that the main HR issues affecting public health facilities relate to a significant dearth of specialists and to a lesser extent, MOs, ANMs and nurses. There are also gaps in the management and supervisory cadres. The bottlenecks to covering staffing gaps pertain to recruitment and retention both. However, as noted in previous sections, there is also a mismatch of locating available staff with an over-concentration of specialists in urban locations and an under-representation in rural/remote areas requiring a process of rationalisation. The availability of appointed personnel at the facilities was also brought up as an issue, as also their motivation to provide quality care, with specific suggestions as solutions.

Clinical staff

In Rajasthan, as per the state data there is an overall shortage of 34% where clinical staff is concerned. The staffing gap is huge across all clinical positions: medical officer (52%), GNM/Nurse grade-II and ANM (37% and 38% respectively), pharmacist (38%), lab technicians (61%), public health nurse (63%) and community health officer (35%). There is a 15% shortage of doctors at PHCs whereas there is an 80% shortfall of specialist (OB&GY, Physician and Paediatricians) positions at the CHC level. Community Health Officer (CHO) recruitment has been completed and that they are all currently undergoing training.

What is even more important is the fact that there is no data in the public domain, or even available from the department that provides information on the inequitable intra-state distribution of various specialists, MOs, nursing cadres, managerial cadres and health workers. As mentioned in several other chapters, there is thus an urgent need for a mapping; geospatial alongside HR, for the entire state of Rajasthan.

The mismatch of available specialists such as availability of surgeons without anesthetists or gynecologists without anesthetists also results in a failure to provide key services such as caesarean sections and routine surgeries. Thus, it is possible to optimise HR even within existing gaps, provided the data is available and there is leadership of sufficient seniority to enable some difficult decisions that would inconvenience some influential persons but is necessary to better functioning of health care facilities. As pointed out by most respondents, employing a firm and fair HR policy for postings and transfers is not only essential, but also doable, as demonstrated by services such as the Armed Forces. While some of the interviewees suggested that a draft HR policy already exists on paper, others did not support this. In any case, the policy was not available for analysis and discussions with participants revealed that it remains a policy on-paper alone.

Managerial and support staff

The cadres of the managerial staff also suffer from staffing gaps. Overall, 34% of the managerial positions are vacant across the state. The shortage at the state level is 21%, district 30% and block level 20%. The position of data entry operator, sweeper, and ward boys were mostly vacant in the facilities we visited.

Data entry operator

In particular, the respondents highlighted the increasing role and workload related to the entry and analysis of data in various vertical programmes. The study also established the fact that data was being used poorly, if at all, for the purposes of programme management and improvement at the district or subdistrict levels. It emerged from the interviews that the data operators are difficult to retain and motivate given the fact that their remuneration is very low – lower than the minimum wage. Government officials at the district level emphasized the role these personnel play in the public health system, adding that there is a need to increase the number of data entry operatory posts at the PHC level from one to two. They also suggested that the operators are recruited afresh each year through the process of tender. However, this leads to wastage of time and resources in training and capacity building. There is also a lack of motivation for the staff when their positions are contractual. Therefore, in the interest of improving retention and conserving resources, the study recommends regularized staff throughout the system and an increase in the number of data entry operator posts at all levels.

Capacity building for data analysis competence

The current study would also recommend, from previous experience[2] with such processes, that a capacity building programme be initiated at district level to enable programme managers to understand and use local data for decision making to improve programmes and hence programme outcomes [please refer to section on monitoring and evaluation at district level for more details].

The following sub-sections discuss the major bottlenecks in HR availability as identified by the study. These are rational usage of HR; recruitment, particularly for rural, remote areas; optimisation through task-shifting and telemedicine; and retention and motivation of workers.

Rational usage of HR

A major crisis of health worker shortage emerged out of the literature review. Despite forming approximately 5.66% of India's total population, Karan et al. estimate that only 2.41% of the country's allopathic doctors are placed in Rajasthan. In fact, the authors' findings reveal that Rajasthan has one of the worst density of allopathic doctors in the country – 2.5 per 10,000 persons

[2] http://phrsindia.org/poshan/

(Karan et al., 2021). This deficiency appears to be more dire in rural areas as has been reported widely in the media. In Rajasthan as per the state data, there is an overall shortage of 34% and 32 % clinical staff and managerial staff respectively (refer annexure 1: status of health human resource as of October '21)..

The study participants also highlighted the need for rational deployment of HR. One government representative commented, "PHCs have too much work for one MO. Even though the sanction is two, the AYUSH MO is in Adarsh PHCs only". Another added that human resources are being wasted in some areas and rationalization is required to resolve this. The study team's visit to the facilities also yielded similar findings, with some facilities having excess HR and some facilities with a shortage against the norms. In particular, the team found that specialists were posted as MOs in some cases and that while one CHC had more than the sanctioned number of MOs, another had several posts vacant.

The study strongly advises rationalization of the health sector human resources with the IPHS 2012 guidelines for public health facilities and geospatial mapping of the same.

Recruitment, particularly for rural, remote areas

As established earlier, much of the HR shortage is in rural areas of Rajasthan with the biggest gap in the specialist group. Putri and colleagues, through their review, suggest a few strategies to increase the supply of rural medical personnel. Rural background of aspirants was the most strongly correlated with a preference to work in rural areas (Putri et al., 2020). This came up in nearly all the interviews with civil society members as well. The study also found that the absence of regularization was a major factor in deterring recruitments.

Reforms in medical education curriculum

Several of the interviewees recommended medical and allied health education reforms to better serve the public health system by producing better trained personnel as well as increased recruitment and retention, and better quality of services. One strong suggestion was that the medical education curriculum should include more exposure to the field realities to encourage field-based posting. One CSO representative commented, "*To ensure availability and retention of doctors in the rural areas, they should be oriented from the very beginning to serve in a particular geography. It is suggested*

that the district level medical colleges offer much scope for this. Fieldwork for the students should be designed appropriately. Reservation for that district plus bond to serve that district should also be part of the policy".

Additionally, the institutions at the district-level can be mandated to carry out certain public health functions and made accountable for the districts they are in. A CSO member mentioned the concept of 'social accountability' in this context. Social accountability of medical schools, as defined by WHO, is *"the obligation to direct their education, research and service activities towards addressing the priority health concerns of the community, region, and/or nation they have a mandate to serve. The priority health concerns are to be identified jointly by governments, health care organizations, health professionals, and the public.*" In simpler words, it can include recruitment of students from underserved rural settings, active participation of rural communities in curriculum development, clinical education by rural clinicians and the service of the local areas for field work and field experience. Evidence suggests that social accountability can increase supply of medical personnel in rural areas as has been achieved in Canada where medical schools have a social accountability mandate (Strasser, 2015).

District-level medical and paramedical colleges

The State government has also adopted some strategies to address the aforementioned shortages, including plans to expand the facilities for medical education. In Rajasthan, currently there are 6 government medical colleges located in Jaipur, Jodhpur, Kota, Bikaner, Udaipur and Ajmer; 08 Society Medical Colleges (including Raj-MES) in Jhalawar, Barmer, Bharatpur, Bhilwara, Churu, Dungarpur, Pali and Sikar; 3 Rajasthan University of Health Sciences and its Colleges. There are a total of 33 Auxiliary Nurse & Midwives Training Centres (ANMTCs); one in each district. However, despite this, there is a deficit of health workers in the state. One government representative suggests that an increase in the number of educational facilities is the way forward, stating *"There is need to focus on strengthening medical education by way of opening more schools and colleges across districts"*. The 2021-22 state budget announcement also included a proposal to open new nursing colleges at the district-level which is an encouraging move by the government. The opening of colleges in all districts and encouraging local students would result in more aspirants locally; ones that are culturally competent and better prepared to serve the area.

Researchers have also suggested that an increase in educational institutions in all districts, including tribal and backward areas, will lead to an equitable distribution of health services and human resources.. A high-level government official corroborated this and added that in addition to

opening of new institutions, public health departments should be operationalized in each district-level training institution so as to enable perspectives other than medicalized ones. The study recommends that medical and paramedical institutions be set up in each district with specific efforts towards increasing local recruitment.

Lateral entry of specialists

With respect to specialist recruitment, nearly all of the study participants suggested that joining the public health system as MOs is highly demotivating for specialists. In particular, an MO at a UPHC who had a specialist degree elaborated by saying that their skills and qualifications were not receiving due respect. Government representatives suggested that the development of a specialist cadre was the solution, with some work on this had already begun. Considering the shortage of specialists in the system, this study suggests that the HR policy make provisions for lateral entry of specialist into the system.

Optimization: task-shifting and upskilling

In most countries of the world, and for many reasons of which the lack of resources is only one, the others being to reduce the medicalisation of health and the dependence upon doctors, it is considered that health and paramedical workers may play an enhanced role in the provision of health care services. The cadres of 'nurse-practitioner' in countries such as Australia, Canada, England, Finaland, Ireland, Netherlands, and New Zealand (Maier et al., 2018) and also the advent of non-medical public health cadre,; such as the Rural Medical Assistant in Chhattisgarh [see section on innovations - Rural Medical Corp in Chhattisgarh], bear testimony to this conceptual understanding. This view was largely reinforced by the study participants as well.

Given the shortage of medical officers at the facility, and in line with the recommendations of many technical groups appointed by the government as well as conceptual understandings of the potential of health care workers to skill-up, as reflected in national policy related to the Health and Wellness Centres, it is recommended that the state may consider a model for care provisioning where the PHC is run by skilled nursing staff backed up by medical officers. The current regulatory framework allows for nurse practitioners. It can also ensure recruitment from local communities, tribal women etc. which would enhance the coverage for and participation of vulnerable populations.

Upskilling and task shifting came up as a recommendation from civil society experts as well as government officials. In fact, the literature review revealed that task-shifting is a viable method to address the health worker shortage and is being used in several low-resource settings. It is also a cost-effective method that adds to health systems efficiency (Seidman & Atun, 2017). One high-level government official commented, "*We have a doctor-centric system in India. But, we need a paramedic-centric system with additional training of six months and protocol based care*". Along these lines, a civil society expert added that task-shifting would be effective but "…*skill building is required. It can be done even without a formal nurse practitioner programme but telephonic connections, standing instructions, and SoPs are required. The Rajiv Gandhi University of Health Sciences can offer certification.*"

Protocols for task-shifting and upskilling

This study strongly recommends task-shifting and upskilling of locally recruited health workers to increase efficiency and counter the health worker shortage in the public health system and suggests that the IMNCI process and experience may be brought to play for all health issues such as non-communicable diseases as well as common illnesses and primary trauma care. This means that task-shifting and upskilling interventions must include specific training and capacity building, especially using protocols and standard guidelines and supportive supervision from the higher levels would be required to establish such systems. The use of telemedicine would be a further support to these health practitioners engaged in public facilities.

Retention and motivation of clinical and managerial staff

Retention of health personnel especially in rural and hard to reach area needs policy level attention. The study found a clustering of doctors and specialists in major towns and cities leading to a huge deficit in rural and hard to reach areas. The lack of fair and transparent postings and transfers was brought up in nearly every interview with government officials and civil society members.

Staff quarters

Further, based on the discussions with MOs at the PHC level (mostly young doctors/fresh graduates), it was reported that they are not available at the centre 24x7 as there is no facility for

stay. In most of the centres that the study team visited, it was found that no staff quarters were available except in one CHC. Staff quarters within the premise or close to the facility must be created along with other infrastructure to enable a decent quality of life for health personnel positioned in remote and rural areas. In the long term, this should include recreational facilities and educational facilities for their children. At the present moment, even a decent habitation is not always available.

Regularization

Additionally, the issue of contractual employment, sometimes even after years of service, was considered to be a disincentive by nearly all the study participants. District-level officials suggest that this issue particularly affects the specialist and managerial cadres with lack of job security and benefits being major concerns. In the case of managerial staff such as data operators, demotivation is compounded by low remuneration and an increasingly greater burden of work.

Linking ACRs to outputs and outcomes

Several respondents suggested that the non-linkage of ACRs to good performance can also be affecting motivation and quality of services. This can be done in several ways. First, ACRs can be made available in electronic mode, thereby allowing for an improved mechanism of monitoring and feedback. Second, ACRs must be linked to performance and be used to inform promotions and postings. Another suggestion in this context was to use performance linked ACRs to determine relaxation in cut off marks for post-graduation.

Level playing field for in-service applicants to PG

The current study also revealed that under the current policy, there is 50% reservation for in-service and 50% for fresh graduates in postgraduate medical courses. It was recommended by some respondents that these two categories should not be treated in the same manner and that in-service candidates should be asked more practical questions during the entrance examination. This would result in a fairer system and place sufficient value upon field experience.

Management training

Finally, the study found that a lack of management training demotivates medical personnel who are having to deal with programme management. Several states have attempted to develop public health cadres that receive special training, including on programme management, to address these concerns. The innovation sub-section discusses this in detail.

Additional incentives, financial and non-financial, have been attempted by some states to improve rural retention of health personnel. One of these is the concept of 'hardship posting' as is used by the Armed Forces. In the health sector, it could be implemented as an incentive wherein if a health personnel serves in rural and hard-to-reach areas for a certain period they may apply for next posting of his/her choice. Other policy interventions attempted by different Indian states are discussed in the innovation section.

The study suggests that there be a fair and transparent policy for postings and transfers, in addition to the use of performance linked ACRs and other incentives as part of a comprehensive HR policy.

Innovations

Chhattisgarh Rural Medical Corp (CMRC)

CRMC was developed by the Department of Health and Family Welfare, Chhattisgarh and the National Rural Health Mission in 2009 to respond to the critical gap in human resources in the state. Under the scheme, health facilities are categorized into three zones according to difficulty levels and various incentives, including financial and extra marks for P.G. admission, are provided for each level. CMRC envisages a number of initiatives to the doctors and other health staff a number of benefits over and above the salary, including a health worker's colony, insurance support and study support for kin. It also has 3-year medical diploma holders in rural PHCs with a special incentive for difficult areas. This cadre, known as Rural Medical Assistants, is an example of task-shifting and optimization of HR. Similarly, the scheme envisaged more staff nurse positions on contract in order to operationalise the 24 x 7 PHCs and CHCs with focus to difficult areas planning

The evaluation undertaken by NHSRC, PHRS and SHRC Chhattisgarh reports that CRMC has played a role in addition and retention of staff in difficult areas. More than half of the respondents had joined only after CRMC was introduced and for most the extra financial incentive was an important reason for not wanting to shift out. Receiving extra marks for PG is another motivational element that has helped in retention of staff in these areas.

Introduction of public health cadre

The introduction of a public health cadre within the health system was another key recommendation received by the study team. Various national level committees – Bhore committee in 1946, HLEG (2012), steering committee on the 12th 5-year plan (2012) also calls for the establishment of public health cadres and their empowerment under the Public Health Act. One civil society member commented, *"Public health cadre, the existing system before NRHM wasn't that bad in terms of having public health capacities within the system. How do we ensure that system improves with public health cadres? A trained public health cadre will be helpful to support population wide preventive services".* The study team suggests that a public health cadre will be helpful in addressing public health functioning for positive health outcomes.

Several countries have demonstrated the presence of public health cadre and its impact on the development outcomes. Literature suggests that in India, Tamil Nadu, Chhattisgarh, and Maharashtra introduced the public health cadre and have seen positive results in managing epidemics/disease control, disasters and other health outcomes. Common to all is the development of a separate public health cadre with its own dedicated budget and capacity building activities. For instance, the Tamil Nadu model separated MOs into public health and medical tracks following stipulated years of service. Those in the public health track are required to secure a public health qualification and the cadre receives specific orientation towards managing public health services while those in medical tracks are involved in hospital care alone. This has had positive impacts with regards to full child immunization coverage, as well as the percentage of women receiving complete antenatal care and comprehensive postnatal check-ups. Tamil Nadu has demonstrated remarkable success in eradicating diseases, sometimes well ahead of national programmes. Guinea worm was eradicated in the state by 1982; the national programmes for eradication of guinea worm only commenced in 1994.

In Maharashtra, the public health department works in close coordination with inter sectoral partners, departments outside health and community organizations to conduct timely investigation and effective management of outbreaks and incidents of communicable diseases. In addition, public health workers conduct active surveillance through house-to-house screening for infectious diseases and also undertake vector control measures where appropriate.

HR policy initiative in Bijapur, Chhattisgarh

The district of Bijapur in Chhattisgarh introduced a bundled policy intervention to improve rural recruitment, retention and motivation of certain health personnel – MOs, specialists, and nurses. This included financial and non-financial incentives: higher than regular salaries; bonus marks for admission to postgraduate education; higher penalty amounts for terminating bonds; additional support to procure local memberships, internet and phone connections; a flexible leave policy; and delegation of tasks and duties. The impact of the intervention included a 207% increase in availability of MOs, 1300% increase in availability of specialists, and a 1240% increase in availability of nurses.

Community health workers

The community health worker (CHW) plays a significant role in delivering public health services. The health sub centre and the functioning of PHC is supported by the CHW by ensuring adequate outreach services in collaboration with the Anganwadi Workers (AWW) and ANMs. They are responsible for the 'last-mile delivery' of all the health programmes.

Currently there are approximately 52,000 ASHAs against 55,000 sanctioned posts. ASHA Sahyoginis have been involved in COVID-19 related activities including conducting door to door surveys, contact tracing, mobilising community for vaccination, distribution of medicine, etc. apart from other ongoing health priorities. The literature review indicated that capacity building was a major gap with respect to CHWs, particularly in the case of COVID-19. One civil society member added, *"[During COVID-19, the] health workforce, particularly CHWs, were overworked. They didn't receive enough information, training/capacity building to deliver COVID 19 activities"*.

High burden of work, combined with inadequate or often conflicting instructions, was also cited as a major issue for this cadre. While discussing CHW roles at the state-level, one official commented, *"Due to the vertical approach, the FLWs suffers with increased workload. There is a need for an integrated approach to avoid any duplication of efforts and effective engagement of FLWs. Role clarity/defining the roles and responsibilities of ASHA and ANM at the field level is needed."*

The newspaper clippings and media reports mention that recently ASHA workers have been protesting for increased honorariums given the increased workload in managing the COVID 19 pandemic. "Their demands include being given permanent posts, an increase in the incentives they receive to achieve approx. Rs. 20,000 to Rs30,000 every month as well as promotions to the post of supervisors, and management. ASHA workers have also been seeking 30% reservation for recruitment as an auxiliary nurse and midwife and implementation of labour laws in their field so they can be covered by regularisation of jobs, fixed hours of work and insurance". The Rajasthan assembly has rejected the demand and clarified that 5% reservation has already been given to those ASHAs willing to join the training programme.

The other reasons for work burden are due to maintenance of numerous reports and records. It was suggested that if digital platforms for reports and records are formalised, it can help in reducing the documentation workload of frontline workers. It was also reported that *"Rajasthan has very good frontline workers and really responsive to instructions from higher level"*. System level inputs may help in addressing their concerns. Given the potential of the ASHA in impacting service utilization, it is emphasised to strengthen strategies to recruit, train, incentivize, and retain ASHAs.

Interviews with the health officials revealed that the ANMs have to travel a lot of distance with little to no transportation facilities available. It was reported by one of the medical officers at rural PHC that he was making an effort in a personal capacity to drop the ANMs to immunization sites. We also found that ANMs were generally active and responsive. They were mostly aware of their roles and responsibilities. However, in some cases, they lacked awareness, especially with respect to public health and supervisory functions. They were aware of the health programmes and are regularly organising the VHND sessions as per schedule. They get adequate support from the medical officer.

During interviews with officials and staff at the facility level it has been strongly suggested that a male health worker is needed to support the functions at the SC and community level. This, they

suggest, would ease the burden of work and considering the nature of the area – rural, remote – male workers would be better able to carry out some tasks. Thus, it is recommended that Multipurpose worker (M) post should be revived, if not everywhere at least in the far-flung areas. They should be based at the sub centre level to ensure accessibility and support the FLWs in community outreach.

HR Policy

The literature review as well as the primary work reinforces that a fair, transparent policy is important for the recruitment, retention, and availability of personnel at health facilities and can address most of the bottlenecks related to HR in the health sector. This policy would also help in minimizing political interference and increase transparency within the public health system. Government officials that were interviewed suggested that the absence of a comprehensive policy deters professionals, particularly specialists, from joining the public health services. Meanwhile, the absence of stringent (but fair) regulations and transparent guidelines for recruitment and postings leads to abandonment of posts and frequent requests for transfers among other issues. A comprehensive HR policy would be further enabled by a legal provision, as in the case of the Act created for better procurement. In an interview with a senior official of the Government of Rajasthan, they recommended that the Act would aid in gap-filling by mandating the manner of postings. For instance, they suggest, that postings of doctors should first be in areas where there are vacancies and that it must be mandatory for medical and allied health workers to serve three and five years of continuous service in the area respectively.

The bond system for retention of medical personnel in remote areas appears to be an oft-used mechanism, having been put to good use in states like Chhattisgarh. However, there was consensus among the study participants that the bond system alone will not enable retention or availability of personnel in the public health system. It was suggested that larger educational, organizational, environmental and policy reforms were required parallelly. These recommendations are discussed throughout the chapter.

Apart from these, it is suggested that the HR policy address the following issues with clarity and that robust plans, with financials, be made explicit in the policy.

- Lateral entry of specialists into the public health system or the development of a public health cadre

- Performance-linked incentives through the use of ACRs for promotions, postings, transfers, and educational incentives
- Non-financial incentives such as offering choice of posting after completing a tenure in a rural, remote area
- Regularization of clinical and managerial staff with a defined road map and financial plan for achieving full regularisation
- Protection of the principles and guidelines outlined in the policy in other circumstances such as public-private partnerships

Recommendations

KEY RECOMMENDATION: DEVELOP AND IMPLEMENT A COMPREHENSIVE, FAIR, TRANSPARENT HR POLICY IN ADDITION TO URGENT DEVELOPMENT OF A GIS SYSTEM WITH MAPPING OF INTRASTATE HR DATA

Other recommendations:

- Rational usage of HR
    - Rationalize HR to services and facilities as per identified gaps and needs
    - A comprehensive, fair and transparent HR policy with political will is imperative to achieve the above
- Recruitment, particularly for rural, remote areas
    - Allow lateral entry of specialists into the system
    - An increase in educational institutions in all districts, including tribal and backward areas with service bonds
    - Medical education curriculum should include more practical exposure to the field to encourage rural posting
    - Recruitment of health workers from local communities
    - Regularization of staff throughout the system
    - Increase number of data entry operator posts with better remuneration
- Retention and motivation
    - Use of 'hardship' posting concept similar to that in Armed Forces to increase motivation for rural service
    - Staff quarters within the premise or close to the facility must be created along with other infrastructure to enable a decent quality of life for health personnel positioned in remote and rural areas
    - Regularization of staff throughout the system
    - Performance-based incentives linked to promotions and postings
    - Annual Confidential Reports (ACRs) should be a genuine tool for career progression
        - ACR should be in electronic mode to enable easy access for reviews and feedbacks.

        - Public health functions should be included as one of the indicators in the ACR, to ensure delivery of primary health care services.
    - Relaxation in cut off marks for post-graduation to be linked with performance based on their ACR
    - The PG entrance exam itself needs to give due importance to practical field experience that has been gained by the in-service applicants to create a level playing field
    - Capacity building of medical officers on public health management and of non-medical officers on public health
- Optimization and task shifting
    - Task-shifting and upskilling of locally recruited health workers to increase efficiency
    - The IMNCI process and experience may be brought to play for all health issues such as non-communicable diseases as well as common illnesses and primary trauma care.
    - Training and capacity building, especially using protocols and standard guidelines and supportive supervision from the higher levels would be required to establish such systems.
    - Telemedicine would provide support to these upskilled health workers engaged in public facilities.
- Community health workers
    - Regularize posts of CHWs with adequate remuneration and employment benefits
    - Facilitate transportation and logistics to support ANMs in their field work
    - Revival of MPW (M) post

Programme Management

Programme management in the context of health systems involves purposeful and efficient use of health system resources, including coordination of and between health cadres, to achieve the desired objectives and outcomes. Efficient programme management can result in improvement of the health care delivery system, increased responsiveness to changing health needs, and appropriate distribution of workload among the human resources. In this section we discuss the results of the study with respect to programme management with the intent to recommend improvements.

On the whole, before separate elements of programme management are approached, it is important to highlight the fact that the entire sector of health needs to be managed under a common umbrella arrangement regardless of the further organisational division of programmes and schemes between the centre and state. This is essential for maximizing the advantage from each programme, preventing overlaps and confusions, enabling convergence and ultimately arriving at better health outcomes for the people of Rajasthan regardless of the source and administration of the programme. However, this holistic vision requires institutional arrangements for it to be effective. During the course of the study, we encountered several good practices and attempts at creating better coordination between various departments. However, they were ad-hoc and wholly dependent upon the individual motivation and leadership of the senior officer concerned. The study team attempts to document these good practices of health programme management that need to be recognized, formalized, and scaled-up, as well as recommend an umbrella mechanism for the PMU that has been derived from the conversations with study respondents.

In most states, it is the coordination between the NHM and DHMS that is known to be challenging (Jeffery, 2021) and this was reiterated in this study. While many good attempts are being made by senior personnel to achieve coordination between the Directorate of Medical and Health Services (DMHS), Rajasthan and the National Health Mission (NHM), this needs further attention since the demands of the processes attached to the NHM seem to be straightjacketed and context-agnostic and occasionally imperious. Several activities and functions that were once under the purview of the DMHS are now carried out by agencies under the NHM, leading to a covert conflict (A. Singh, 2007). Such conflict usually stems from differing priorities of the centre and the state, the latter having a more 'localized' context. More than that, the programmes face difficulties in day-to-day implementation.

These issues also came up in interviews with civil society agencies and government officials with one of the former stating that *"State must get due autonomy for decision making from the centre. There is too much imposition by the centre. No decentralisation of planning [is] possible in the current system. [There are] multiple schemes programmes with multiple overlapping agenda and no rationalisation."*

Some states have attempted institutional mechanisms to alleviate the inherent tensions between programmes led by different processes so that the implementational levels closer to the ground are protected from such tensions, such as the SHRC Chhattisgarh, which is described as a good practice further in the section.

Horizontal integration of programs

The health system in Rajasthan, as it is in India, is segmented, vertically and horizontally, across the varied departments and agencies related to health. Although health is a state subject under the Constitution, the central government holds considerable power as a resource provider. To add to this, several ministries like Labour and Defence run their own health institutions and target to provide care to mostly their own workforce and their families (Rao et al., 2018). The system is further fragmented given that many important health related functions, such as water and sanitation, nutrition, drug and medical device pricing etc are carried out by ministries other than health. One of the rationales for such agencification is that it is important to separate policy makers and policy implementers, to foster autonomy and responsiveness. Yet, this rationale is only applicable when the implementing agency is autonomous in nature. Another reasoning is that agencification will lead to minimal duplication of processes and activities (A. Singh, 2007). However, in practice, the latter is only possible if there is horizontal convergence across departments and ministries, and the state and centre. Most importantly, this integration is required to enable frontline workers and programme managers that are common to all programmes as we move towards the interface between the health system and its clients, to function well without being pulled in different directions. This point was brought up several times at several levels by the respondents of the study as discussed further.

At present, the verticalization of programmes arises from a lack of coordination between agencies, leading to unused data, duplication of activities, conflicting directives, and inefficient implementation. Horizontal integration, sometimes conflated with convergence, of programmes and schemes has long been considered a means to achieve a more efficient health care system, one

that is able to provide patient-focused care. Some of the expected outcomes of horizontally integrated health systems in low- and middle-income countries are improved efficiency as competing programmes can share scant resources between them and under-funded programs and themes, such as that of adolescent health, receive resources through indirect means (Mounier-Jack et al., 2017). This has special implications for a resource-strapped state like Rajasthan. Further, an integrated health system is also far more convenient for patients and community members to avail services, thereby increasing utilization. Integration at the higher levels would also resolve the conflict between the DHMS and NHM as described earlier.

This is not to say that such a mechanism does not exist in Rajasthan. The review of literature found several instances of coordination undertaken in an informal manner. For instance, during COVID-19, civil servants would have had to share information and collaborate between the various departments to address the complex issues at play. However, such ad-hoc coordination is not sustainable in the long run and lacks political impetus to positively shift the status quo.

It must also be realized that despite the segmented health system, the main individuals involved in last-mile delivery of health services are the ASHA and the ANM. A government official surmised it as such: *"GoI gives new guidelines and new people every day, but at the bottom, the ANM and ASHA are the two main implementers. The workload of the ASHA and the ANM increases with the change in strategies and implementation of new programmes"*. The review of literature as well as the interviews revealed a continuously changing landscape of vertical top-down instruction from the centre that causes confusion among frontline workers [refer to the community health workers sub-section in human resources for health for elaboration on other issues faced by frontline workers and recommendations].

Horizontal integration of the Rajasthan health system at all levels is strongly suggested. A mechanism that would allow for integration of services as well as systems of information, finance, planning, training, and contracting is discussed in the following section. As discussed in the sub-section on programme management unit, the PMU will play a pivotal role in achieving this recommendation.

Monitoring and evaluation

Monitoring and evaluation are two components of programme management that ensure the processes are running as planned and that the intervention is working towards the desired objectives. While monitoring involves the systematic tracking of programme execution (like tracking the inputs and outputs) throughout implementation, evaluation is concerned with measuring the effect or impact of the programme on outcomes. The latter is usually what keeps track of the interventions' progress on objectives. Robust monitoring and evaluation systems can provide the administrative and managerial staff to understand the progress of the intervention, thus enabling better programme management. The system also supports the development of feedback loops that feed into decision-making processes, all the while generating evidence that would help in scale-up (Mpofu et al., 2014). Government officials that were interviewed strongly suggested better monitoring systems, reinforcing the role of field visits and supportive supervision mechanisms. The study found that the need for a strong monitoring system for Rajasthan's health delivery system has been raised by Jan Swasthya Abhiyan (Peoples Health Movement – India) as well. The Jan Swasthya Abhiyan recommendations for Rajasthan's Right to Health Bill make clear demands for monitoring systems, including right to health boards or councils at state, district and block levels, with their composition and roles detailed out.

According to Jacobs and colleagues, there are three ways to approach the development of monitoring systems – feedback systems, participatory monitoring and evaluation, and logframes – with each approach having slightly different purposes (Jacobs et al., 2010). While feedback systems are expected to generate real-time data on user behaviour such as utilization and perceptions, participatory monitoring and evaluation looks to enable local communities to influence and direct local action. Lastly, logframes monitoring systems come in with a macro-approach to have oversight of activities, outputs, and outcomes. The study team's experience and the interviews suggest that a combination of all three of these is necessary for strong monitoring and evaluation systems.

Body for state level monitoring and evaluation

The World Health Organization suggests that strong monitoring and evaluation system should inform strategic planning and programme implementation to ensure accountability of the health system (World Health Organization & International Health Partnership, 2011). A system such as

the one described above requires an institutional mechanism for monitoring as well as evaluation, with adequate autonomy with respect to decision-making. This issue came up nearly all of the interviews with civil society and government officials. Although there was consensus that a special cell was required for the purpose, their opinions on the institutionalization of a monitoring and evaluation body were divergent. Thus, one government official suggested that monitoring activities are better undertaken by the health department itself as it is the only one that can undertake disciplinary action in this context. They felt that the SIHFW and the RMSCL had other well-defined roles of capacity building and drug management and would not be suitable for monitoring. Civil society members suggested that expanding the scope of SIHFW could be one possible solution.

As discussed further, it is suggested that the proposed PMU between the DMHS and the NHM [see section on programme management unit] be given the responsibility of monitoring and evaluation at the state-level.

Monitoring and evaluation at district level

As established, monitoring and evaluation of health programmes is key to successful implementation. However, doing so requires quality data as defined by the accuracy, completeness, integrity, precision, and reliability of the data [refer to section on data systems for more details. Studies from low-resource settings indicate that the establishment of a district-level monitoring and evaluation cadre yield multiple benefits: improved health worker capacity to monitor and evaluate programs within the districts; improved data quality, management, and reporting; increased use of health data for disease surveillance, operational research, and planning purposes; and increased availability of time for nurses and other health workers to concentrate on core clinical duties (Mpofu et al., 2014). As part of this recommendation, it is suggested that this district level monitoring and evaluation cadre use block-level disaggregated data for decentralized health planning to the best extent possible.

Many specific suggestions were made in this regard including the need for capacity building of district-level personnel on data analysis and usage, the need for an extra data entry-cum-analysis operator and the need to enhance the profile of the current data entry operator with decent remuneration and regular employment. It needs to be noted that the current post of data entry operator attracts a remuneration of a mere 8000/- a month which is lower than even the minimum

wages for an unskilled worker. These workers are also considered to be overburdened with the data requirements of each programme. The State may consider expanding this position and role and adding extra human resource to this function.

Data systems

With the strong emphasis we lay on monitoring and evaluation, it is essential to address the issue of data quality. According to USAID's publication on data quality assurance tool for programme managers, data quality refers to the extent to which the monitoring and evaluation system or the health management information system adequately represents the programme's activities. It has elements of accuracy, reliability, transparency, completeness, precision, and integrity.

The issue of transparency of data came up in interviews with civil society representatives who have worked in Rajasthan for decades. One of the ways to ensure transparency is to have data readily available for analysis to civil society organizations. A civil society expert interviewed for the study suggested that the lack of adequately disaggregated data hampers program implementation as well. This unavailability of granular data was confirmed as the study team attempted to obtain data from official sources. Despite having a mandate from the government, it was unable to obtain block- and district-level data for several indicators.

The quality of data determines, to a large extent, the ability of the policy makers to correctly identify the needs and responses of the communities, as well as assess the implementation of health programs. A scoping review of interventions to address data quality issues in low-resource setting found that parallel investments into technology upgradation, capacity building, and a system of data quality assessment and feedback were the most useful (Lemma et al., 2020). In addition to this, the review of literature as well as the interviews revealed the need for a common, streamlined HMIS to ease the burden of frontline workers. At the moment, it appears that the frontline workers have to fill in similar or same data points into different information systems which is further the result of the many parallel, vertical programmes. This adds unnecessary burden to their already mounting workload (particularly in the context of COVID-19), but just as importantly, utilizes time and monetary resources for activities such as multiple, possibly duplicate capacity building activities. An integrated HMIS is also essential for horizontal convergence of programs, an essentiality for better functioning of the health system (Mounier-Jack et al., 2017). In line with suggestions from civil society members, digitization of records at the source combined with the

development of a single, integrated data system as a further step to reduce the workload on frontline workers is suggested.

A proposal from IIHMR submitted to the Government of Rajasthan 'Rajasthan Integrated Digital Health Information System for Quality Public Healthcare Services' (RIDHI System) may have the potential to fulfil these recommendations. However, the study team highlights the concern of exclusion of vulnerable individuals when requiring particular forms of identity proof and seeding of information from multiple sources. Additionally, issues of data privacy must be addressed properly for the system to be considered appropriate.

Monitoring of human resources for health

Supportive supervision

Improving health worker performance is important for any health system. The issues and challenges associated with health workers in Rajasthan have been discussed in the section on human resources for health. This sub-section discussed supportive supervision as a strategy to strengthen Rajasthan's public health system.

Supportive supervision has been defined as a process that promotes quality at all levels of the health system by strengthening relationships within the system, focusing on the identification and the resolution of problems and helping to optimize the allocation of resources (Kok et al., 2018). The focus on human-centered supervision is what differentiates it from conventional supervision with its focus on managerial control (Hernández et al., 2014). Studies of supportive supervision mechanisms from multiple countries point to a need for supportive mechanisms to be embedded in wider systems strengthening actions. (Kok et al., 2018). Civil society experts engaged with running faciltiies in PPP mode who were interviewed reiterated this finding, suggesting that supportive supervision could be one of the tools to improve health worker monitoring and thereby performance. They were also in consensus that supportive supervision must be established at all levels of the health system and not just for community health workers.

A landscape review of supportive supervisory mechanisms in India found that despite identification of the mechanism as an effective tool, there is little to no guidance on how it should be operationalized (S. Gupta et al., 2021). This is in line with the review of literature as well. Despite

the many vertical programmes, the 'implementing cadre' and the 'supervisory cadre' are likely to remain same throughout. In this case, the establishment of a supportive supervisory mechanism requires the defining of clear roles and responsibilities, in addition to monitoring of supportive supervision activities with specific indicators. The absence of these guidelines can render supportive supervision ineffective, and can, in some cases, exacerbate existing challenges. It must also be noted that effective supportive supervision requires capacity building of 'supervisors' to enable adequate facilitation, mentoring, and problem solving on their part.

Other HR monitoring mechanisms

There is also a need for establishing effective monitoring mechanism to ensure the quality of service delivery at all levels. As discussed in the section on human resources for health, workers face several challenges in their work which leads to diminishing performance. The interviews with government officials as well as civil society members suggest that linking career progression to performance can be an effective mechanism to monitor health workers and officers at higher levels. Multiple respondents suggested that one avenue to do this is the Annual Confidential Report (ACR) and it was suggested that the ACR be linked to the provision of public health functions and the performance of the health facility under their jurisdiction. However, in order to be fair to officers struggling against greater odds to achieve programme outcomes, such as in remote areas and working with vulenrable populations, a 360^0 process including self-assessment and assessment by peers may be included. The study also suggests that the ACR be electronic, enabling easy access for reviews and feedback.

Another recommendation received during the course of the study was also related to linking monitoring and career progression. Presently, candidates receive relaxation in cut-off marks as they apply for post-graduation based on their duration of service in the public health system; the 10-20-30% advantage with each year of service. However, the team received strong suggestions that this relaxation be linked to performance as well, since the current system does not necessitate actual work performance, merely presence.

In terms of recruiting and retaining HR, the study team interrogated the need for a bond system mandating a rural posting after MBBS/PG as attempted in several states including Chhattisgarh (Rajbangshi et al., 2017). However, most experts that were interviewed believed that performance-

based career progression is far more efficient than the bond system in retention and availability of human resources for health in rural, remote areas.

Finally, a periodic review of programme implementation and service delivery between the hierarchical levels (e.g. state and district, district and block, etc.) could be undertaken in-person or remotely. The discussions at district-level indicated that this method has taken off during the pandemic with video conferencing occurring almost daily. However, the ad-hoc conferencing has turned out to be counter-productive in most cases. Officials mentioned that they have had to stay away from field visits or spend time in unproductive activities because of the unplanned nature of these calls. It is suggested that monitoring, including remote monitoring and reviews, take place on fixed days and on a periodic basis. Also, the review must have an agenda in place so that only relevant officials engage in the meeting while others can continue with their specified work.

Technology for monitoring

The use of geospatial tracking of services is one method to leverage technology for monitoring. The health department is already undertaking this exercise to monitor Rashtriya Bal Swasthya Karyakram activities through an ODK application that allows for real-time monitoring. A conversation with a high-level official indicated that this mechanism has been successful in increasing the identification of birth defects manifold and lowering the time taken for intervention. The technology also helps in system readiness by providing an estimate of the resources required to absorb the referrals. The same official added that a similar application was being developed to track service delivery through the mobile medical units set up in the state.

Rajasthan's ASHA-Soft programme is another example of using technology in monitoring. In addition to enabling online payments, the software also monitors the performance of the ASHA Sahyoginis' work. An evaluation of the feasibility and effectiveness of this intervention found that over 96% of the ASHA Sahyoginis perceived increased motivation to work and over 80% felt that the programme was appropriately assessing their performance. The authors also found that it resulted in timely payment of incentives, a good work environment, reduced corruption at various levels, and improved quality of work life (Joshi et al., 2020). Such technology has also been seen as the future of health systems. Mitchell and Kan postulate that digital health technologies used in supervision have the potential to provide automatic feedback to health workers, identify problems in real-time, and offer potential solutions (Mitchell & Kan, 2019). However, the use of such

technologies comes with a caveat. There is a paucity of research on the total cost of development and implementation and the return on investment (Long et al., 2018) and so the use of digital health technologies for this purpose must be strictly monitored and evaluated to ensure optimal utilization of resources. This study suggests the thoughtful use of digital technologies that aim to improve quality of services and support programme implementation but emphasize the need for adequate capacity building for all users and that such technologies should be part of larger reforms. Additionally, it is suggested that the implementation of these technologies be accompanied by rigorous research on the cost-effectiveness so as to inform replication and scale-up.

Participatory monitoring and evaluation systems

Community-based monitoring (CBM) of the health services is an accountability mechanism embedded in the NHM. The process includes drawing in community members, motivating and mobilizing them, building their capacities, and enabling them to participate and provide feedback about the public health system. Civil society organizations working at the grassroot level may play an important role in supporting these activities. Researchers have suggested that CBM is one of the crucial tools to the success of national health programmes (Garg & Laskar, 2010). Evidence from within and outside India indicates that CBM can lead to better monitoring of health providers and more concerted efforts on the part of community health workers. Positive impacts on utilization of health services and health outcomes was also observed in nearly every evaluation (Bjorkman Nyqvist & Svensson, 2007; Lahariya et al., 2020; V. Singh & Chauhan, 2021).

There are many institutions that can be used for CBM. Under the NRHM, the following institutions were expected to take on the task of CBM: VHSNCs, the PHC monitoring and planning committee, the block monitoring and planning committee, the district monitoring and planning committee, and the state monitoring and planning committee (Khanna, 2013). Two things are of importance here. First, the NRHM had combined the elements of monitoring and decentralized planning. However, this study makes a distinction with CBM being used in the context of monitoring, while decentralized planning is discussed under the section on decentralized governance. Second, the institutions, as envisaged by the NRHM, are supposed to have interlinkages between levels. For instance, the PHC monitoring committee will have representatives from the VHSNC, while the block monitoring committee will have representatives from the PHC monitoring committee.

Alternatively, or in addition to these committees, we suggest that self-help groups (SHGs) can take on the role of CBM. The study team's experience in rural areas of Jharkhand, Madhya Pradesh, Chhattisgarh, West Bengal, and Odisha suggests that with support from civil society organizations, SHGs are able to conduct CBM with adequate rigour. Research based out of several Indian states confirms the study team's experience (Seshadri & Kothai, 2019; Sharma & Anand, 2018). Please refer to the section on decentralized governance for an elaboration of the roles VHSNCs can play.

Programme Management Unit - Coordination mechanism

Research suggests that successful efforts towards better coordination and integration for a robust health system share a few characteristics. One of these strategies is to improve leadership and morale of staff at all levels, including political cadre and frontline workers, and develop a culture of support. The authors also emphasize the need for task shifting which first requires a workforce is that is well-trained to provide an expanded range of services at the community level (Mounier-Jack et al., 2017). While integration of services is a desirable outcome, higher levels of integration at the systems level, particularly in the domains of governance and funding, are required to address the complex nature of the burden of disease.

Recommendations for doing so at the national level are beyond the scope of this report. However, the study suggests instituting a formal coordinating structure – a PMU – between the DMHS and the NHM at the state-level.

The review of literature and primary information from interviews suggests that this would have to be an interdisciplinary body set up in a legitimate manner, with political mandate, and given the responsibility of coordination, integration, and contextualization (Mondal et al., 2021). Multiple interviewees recommended that this body be led by a secretary level person. It would also house senior officials from the NHM stream to the DMHS.

Envisaged roles

- Act as a translatory mechanism, contextualize the implementation of national programmes within the state.
- Coordinate the horizontal integration of the health system
- Conduct operational research to inform programme and policy

- Develop intersectoral, integrated models of care such as multidisciplinary health workforce teams.
- Identify needs and facilitate capacity building
- Monitor services, activities, processes and outcomes, including monitoring of rational treatments and quality control of health care services
- Advise policy makers on health policy

Positioning

1. *A coordination committee housed in the Health Department, led by a technical person*: Some models are available that point to the usefulness of such an agency, such as the SHRC Chhattisgarh. The SHRC is supposed to be apex body for technical support to the health system at all levels within the state. It is also meant to be responsible for systems strengthening activities at the district level, development of strategies, programme planning, and supporting innovations. In addition, the SHRC also undertakes research to support decision-making. Monitoring, therefore, is within the purview of the SHRC. SHRC, Chhattisgarh is involved in all these activities and has been recognized as an example of successful institutionalization, especially because of the technical agency's support in the scale up of the Mitanin programme in the state (Nambiar & Sheikh, 2016).

   Various suggestions were made during the study for where such a body could be located:

a. Within the Health Department itself: This is one of the most prevalent ways of formalizing an institution to coordinate integrated systems and allow for intersectoral action, yet its effectiveness can be reduced by competing interests of the departments involved. Therefore, it requires careful design and implementation Its composition can consist of nodal officers of the various programs with a technical person of Secretary level serving as the Chairperson. While this would have obvious advantages of enabling better implementation, it might be limited by a conflict of interest in terms of being able to point to lacunae, or advocate for necessary changes.
b. Within the State Institute of Health and Family Welfare: This is an autonomous organisation already tasked with capacity building and training. It would need further and specific strengthening for public health management.
c. Within the newly envisaged Center of Public Health Excellence mentioned by a respondent, or the School of Public Health mentioned by another.

d. Within a semi-autonomous body specifically created for the purpose such as an SHSRC (During the interviews, the study found that the SHRC, Rajasthan is defunct and the development of such an agency was supported by some of the interviewees. Others suggested that the SIHFW is involved in some of the same roles as an envisaged SHSRC, and so an expansion of scope of work would suffice.)

When creating this PMU, it is important to design it with clear goals and defined authorities so that it does not end up becoming one of the multiple agencies involved in health system administration and maintains a hierarchical superiority which would only be possible through a Secretary-level leadership. The HR of this institution would need to be in line with all its functions. To illustrate, the HR of the SHRC comprises of program personnel, researchers, resource persons, data analysts, etc. As and when required, the PMU may be enabled to bring on specific skills and expertise by appointing appropriate task forces. This Programme Management Unit would then become an important part of the larger umbrella structure that is recommended to provide leadership, governance and motivation to the entire system at State level as discussed in the governance section.

Recommendations

KEY RECOMMENDATION: INSTITUTE A PMU TO ACHIEVE ALL THE REFORMS AND RECOMMENDATIONS DISCUSSED ABOVE

Other recommendations:

- Coordination and convergence
    - Horizontal integration of the Rajasthan health system: integration of services, information, finance, planning, training, contracting
    - Convergence with other related ministries such as Water and Sanitation, Women and Child Development, Food and Public Distribution, etc.
- Monitoring and evaluation of programmes
    - State-level monitoring and evaluation activities, including monitoring of rational treatments and quality control of health care services
    - Development of a district-level monitoring and evaluation cadre
        - Capacity building on data analysis, public health management
        - Expanding role of data entry operator, with adequate remuneration; adding positions at PHC level
- Data systems
    - Establish a GIS that includes components of facilities, services, human resources, etc. to enable PMU functions
    - Use of disaggregated, block-level data for district health planning
    - Develop a data dashboard for public domain with disaggregated data available for analysis
    - Make parallel investments in technology upgradation, capacity building, and system of data quality assessment
    - Data digitization at source with adequate capacity building for frontline workers
    - Single, integrated HMIS to reduce duplication, conserve time and resources
    - Increase data entry operator posts at PHC, regularize personnel, and provide adequate remuneration
- Monitoring of human resources
    - Utilize supportive supervision, ACR-linked monitoring, and periodic review meetings for monitoring of human resources

- Participatory monitoring and evaluation
    - Strengthen VHSNCs and build capacities for participatory monitoring
    - Involve CSOs in capacity building, mobilization activities
    - Utilize the SHG platform for community-based monitoring

Governance

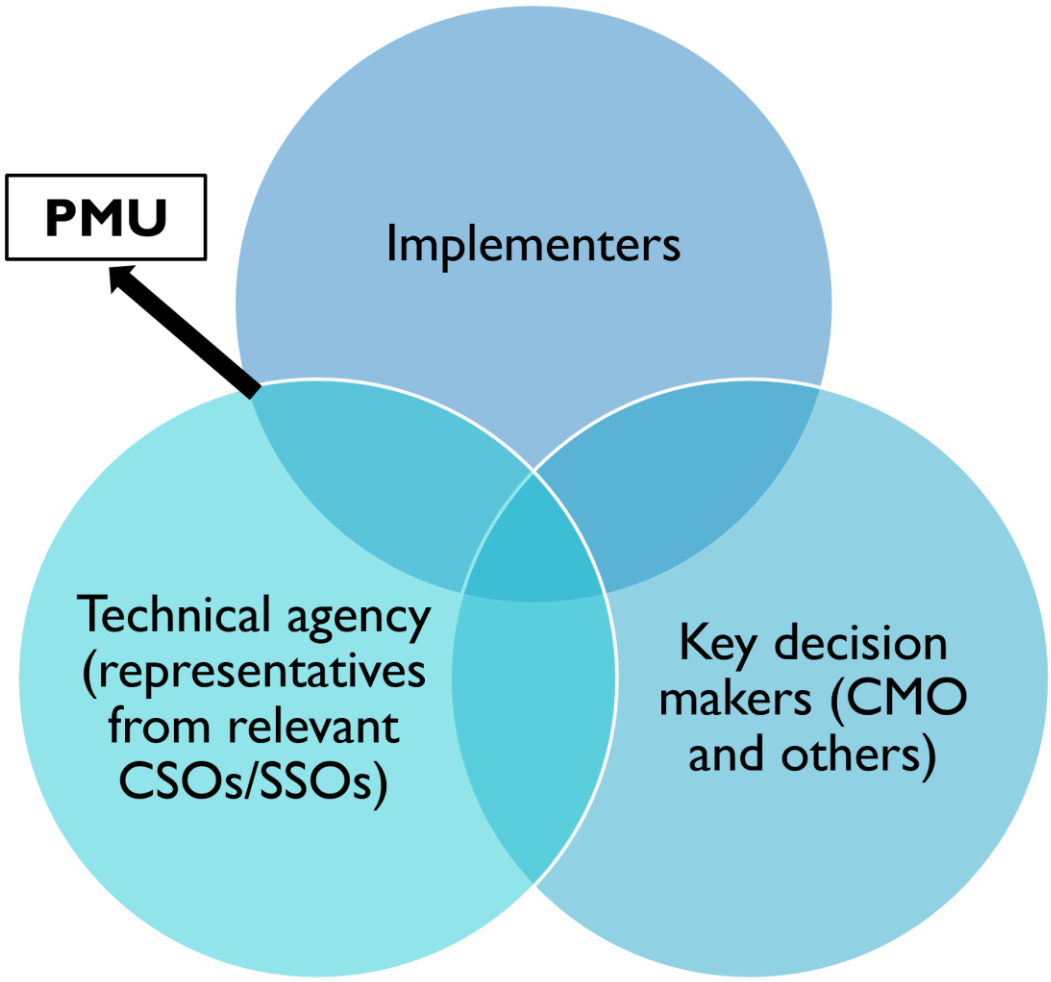
Evidence from across the world indicates that there is a strong association between governance and health outcomes (Fryatt et al., 2017). There are several definitions of health governance. The following definition is widely accepted: "ensuring strategic policy frameworks exist and are combined with effective oversight, coalition building, the provision of appropriate regulations and incentives, attention to system-design, and accountability" (*Everybody's Business: Strengthening Health Systems to Improve Health Outcomes*, 2007; Mikkelsen-Lopez et al., 2011).

One of the major factors affecting health governance is the existence of strong leadership and political will at the highest levels of government. Efforts towards health governance in Rajasthan is demonstrated by the government's prioritization in health over the last few years. However, despite these efforts, Rajasthan fares poorly on indices that measure health governance. For instance, Rajasthan scores 61.43 on the governance and information sub-index in the Niti Aayog Health Index IV report. Despite an incremental gain of 3.23 since the reference year 2019-20, it ranks 9th among the 19 larger states. Among the states that scored better than Rajasthan are Kerala and Chhattisgarh with scores of 83.37 and 70.99 respectively. **Given that a stable tenure is essential to good governance, it is a red-flag that the average occupancy of key state-level posts and the average occupancy of CMOs both went down since 2019-20 (15.99 to 15.01 months and 18.08 to 15.97 months respectively)**. **Rajasthan, however, improved against the indicator of number of days taken to transfer NHM funds from the state treasury to the implementing agency (69 to 33 days)**. Similarly, the state received a score of 0.249 on the public health governance index, a part of the composite Good Governance Index. Ranked 6th out of 8 states in its category, it fares worse than West Bengal, Jharkhand, Bihar, Odisha, and Chhattisgarh. These indices and rankings indicate a potential for improving health governance on multiple fronts.

If the recommendations of the study are to gain ground, it is suggested that the creation of a high-level group in the Chief Minister's Office, i.e., an executive body, that oversees health and supports the PMU in its tasks through leadership and higher-level policy and administrative decision-making (see figure 5) is required. This body, constituted by implementers, technical agencies, civil society groups and key decision makers (CMO, task forces, standing committees) would also provide strategic oversight and conduct a biannual review of the health system and policies. The PMU, positioned as the apex technical body and consisting of implementers as well, as suggested in the

section on programme management would be well able to represent the overlap between the 'implementers' and 'technical agencies'.

Figure 5: Recommended constitution of high-level executive body



Note: CSO = Civil society organization; SSO = Social sector organization; CMO = Chief Minister's Office; PMU = Programme Management Unit

Apart from giving political legitimacy to key decisions, it is expected that its creation and placement will result in the adoption of a whole-of-government approach to health, leading to the consideration of health in all policies. The literature review also revealed that this approach addresses a perceived lack of command as well as improves prioritization of health, a gap that was articulated by several of the study participants.

An additional recommendation was received with respect to improving health governance. involving the training and capacity building of the local Members of Legislative Assembly (MLAs)

with support from a technical agency. It is expected that MLAs that are oriented towards public health would be more likely to prioritize public health and its system within their constituencies. The study suggests that such an exercise could be undertaken by the state with support from a suitable technical agency such as the WHO.

Decentralized governance

Decentralization refers to the transfer of the power of decision-making from a higher level of administration to a lower level, from the state to the districts for example, and has been considered one of the solutions to the limitations posed by centrally governed health systems. WHO recommended decentralized governance as a method to better serve underserved rural and remote communities in low- and middle-income countries ("Decentralization Concepts and Issues: A Review," 1990). However, there is still much confusion on how the decentralization process impacts health system performance and outcomes (Dwicaksono & Fox, 2018). This is partly because the impacts and outcomes are strongly determined by the extent of decentralization.

According to Mills and colleagues, decentralization can be of four forms: devolution of authority from 'central' to autonomous governments with strengthening of subnational levels; deconcentration of authority from a centralized location to peripheral; delegation of a defined set of functions to other organizations that are outside the structure of the central government but can be controlled by it; and privatization of functions by contracting out to not-for-profit or for-profit private entities ("Decentralization Concepts and Issues: A Review," 1990). Most academic literature focuses on devolution, usually considering it to be synonymous with decentralization (Dwicaksono & Fox, 2018). This study will also be discussing decentralization in the context of devolution.

In analyzing what enables decentralization to be effective, Liwanag and Wyss suggest that the following conditions must be met: (a) a multistakeholder approach and monitoring implementation for planning; (b) raising revenues at local levels and pooling funds at central levels; (c) thoughtful allocation of resources and good relationships between health officers and elected officials; (d) promotion of local innovations while ensuring fidelity to overall objectives; (e) locally generated data that is monitored at a higher level (Liwanag & Wyss, 2018). However, there seems

to be a consensus of sorts that optimal health system performance requires a balance between decentralization and centralization. Abimbola, Baatiema and Bigdeli suggest that functions such as information systems and purchasing that benefit from economies of scale should be centralized, while functions that require need-based, contextual decision making such as service delivery should be decentralized (Abimbola et al., 2019). This form of decentralization came up time and again in the interviews with civil society experts who reiterated the need for contextual implementation of policies through decentralized planning. As we discussed the need for local planning and implementation, one civil society member commented, "Solutions do not need to be imported from outside - they are available from the local people involved in running programmes as well as community". This view also echoes the original framework for NRHM for communitisation.

The civil society experts interviewed for the study also mentioned that VHSNCs play a vital role in decentralized health governance, particularly for health planning and monitoring. According to government data, there are 43,440 VHSNCs in the state and, based on existing norms, 40,698 VHSNCs receive the stipulated untied funds of Rs. 10,000 per year. In practice, however, we find that most of these institutions are defunct. As seen from the data we received, just under 3.6% of the untied funds sanctioned for financial year 2021-22 were actually utilized by August 2021. It is suggested that these committees be re-activated, with adequate capacity building of the members and outcome-based incentives for the committees to ensure they remain functional.

PRIs are another community-based institution that can be involved in health governance, as demonstrated by the Kerala model as described in the box.

The Kerala Model for Decentralised Health Systems Management (Chatterji et al., 2021; Thomas & Rajesh, 2011)

The state implemented the People's Campaign for Decentralized Planning in 1996 which led to the devolution of certain powers of governance, including that of the health sector, from the state to regional or local governments. Following this, local governments gained control of 35-40% of the state budget. The health sector has a three-tier system of self-governance – panchayat-, block-, district-level and the PHCs, SCs are under the jurisdiction of the Panchayats. Communities work with the system to identify health needs and priorities, and investments are made by the local governing body accordingly. Kerala received a score of 0.721 on public health governance index (Good Governance Index 20-21 report) which is the highest in the country, and a score of 83.37 on governance and information index (NITI Aayog Health Index - IV report). The entire process of decentralised planning and management is supported by Kerala Institute of Local Administration (KILA); an autonomous institution functioning for building capacities of the local governments in Kerala.

This study suggests that the government undertake a pilot intervention to inform policy on devolution of health financing, planning, monitoring to PRIs. Additionally, it is suggested that a support institution for decentralization/devolution of health system be created in the state.

Health financing

According to the Centre for Budget and Policy Study's analysis of Rajasthan's public health expenditure, Rajasthan has increased its total expenditure on health as a percentage of the overall state expenditure, shifting from 4.9% in 2012-13 to 5.7% in 2017-18. For the year 2021-22, the state budget projects an estimated expenditure of Rs. 16,269 crores for the health and family welfare sector of which 1,463 crores has been allocated for the Public Health Insurance Scheme and Rs. 1,687 crores towards the National Rural Health Mission. However, despite the increase in budgetary allocation, the literature review and interviews highlighted a few significant issues of health financing in Rajasthan and led to the following suggestions. First, to meet the stipulation of the National Health Policy, 2017, Rajasthan would have to increase its total expenditure on health as a percentage of total state expenditure to at least 8%. A government representative confirmed this, saying that budgetary allocation needs to be increased, adding that the overall expenditure as a percentage of gross state domestic product is low. Next, the study found that the public health insurance scheme is a major priority for the government, with about 9% of the budget estimate

allocated to it. Civil society members indicated that this led to low prioritization of public health system strengthening – "*even with a small budget, prioritization is the issue… when the priority is this, the public health system suffers*". Low capital expenditure, they added, contributed to poor public health infrastructure. They recommend that the capital expenditure required for infrastructure strengthening should take into account the expenditure required for all facilities to meet the IPHS 2012 norms. Additionally, the study found that despite the budget announcement that the scope of the state-specific programmes will be expanded, the budget estimate for MNJY has been decreased by 69.92 crores resulting in an allocation of Rs. 150.34 crores. This contradiction between the proposed implementation and budget allocation is confounding.

Recommendations

KEY RECOMMENDATION: CREATE AN EXECUTIVE BODY – A HIGH-LEVEL GROUP IN CM OFFICE – FOR HEALTH GOVERNANCE

Other recommendations:

- Decentralized governance
    - Support the reactivation and strengthening of VHSNCs with adequate capacity building of the members and outcome-based incentives for the committees to ensure they remain functional
    - Pilot devolution of health financing, planning, monitoring to PRIs
    - Create a support institution for decentralization/devolution of health system
- Health financing
    - Increase total expenditure on health as percentage of GSDP to at least 8%
    - Invest in strengthening of public health systems with capital expenditure, taking into account the expenditure required for all facilities to meet the IPHS 2012 norms

REFERENCES

Abimbola, S., Baatiema, L., & Bigdeli, M. (2019). The impacts of decentralization on health system equity, efficiency and resilience: A realist synthesis of the evidence. *Health Policy and Planning*, *34*(8), 605–617. https://doi.org/10.1093/heapol/czz055

Arokiasamy, P. (2018). India's escalating burden of non-communicable diseases. *The Lancet Global Health*, *6*(12), e1262–e1263. https://doi.org/10.1016/S2214-109X(18)30448-0

Bhore, J. (1946). *Report of the Health Survey and Development Committee*.

Bjorkman Nyqvist, M., & Svensson, J. (2007). Power to the People: Evidence from a Randomized Field Experiment of a Community-Based Monitoring Project in Uganda. *World Bank Policy Research Working Paper*, *4268*.

Borana, S. L., & Yadav, S. K. (2017). Spatial Distribution Disparity Analysis of Urban Amenities in Municipal Wards Periphery of Jodhpur City. *International Research Journal of Engineering and Technology (IRJET)*, *5*(4), 474–482. https://www.irjet.net/archives/V4/i10/IRJET-V4I10319.pdf

Borgman, M., Matos, R. I., Blackbourne, L. H., & Spinella, P. C. (2012). Ten years of military pediatric care in Afghanistan and Iraq. *Journal of Trauma and Acute Care Surgery*, *73*(6 SUPPL. 5), 509–513. https://doi.org/10.1097/TA.0b013e318275477c

Chatterji, T., Roy, S., & Chatterjee, A. (2021). Global contagion and local response: the influence of centre–state relations and political culture in pandemic governance. *Asia Pacific Journal of Public Administration*, *43*(3), 192–211. https://doi.org/10.1080/23276665.2020.1870866

Chauhan, A. (2020). Levels of maternal and child health care in Rajasthan: A district-level analysis. *Population Geography*, *42*(1), 1–12.

Combi, C., Pozzani, G., & Pozzi, G. (2016). Telemedicine for Developing Countries. *Applied Clinical Informatics*, *07*(04), 1025–1050. https://doi.org/10.4338/aci-2016-06-r-0089

Das, A. K., Nagarajan, S., Bhargava, R., Singh, R. R., Srivastava, A. K., & Dutta, A. (2021). Factors

Impacting Prescription Practice in Primary Healthcare Setting in India: A Case Study in Rajasthan. *Indian Journal of Public Health Research & Development*, *12*(2), 36–46.

Dash, S., Aarthy, R., & Mohan, V. (2021). Telemedicine during COVID-19 in India—a new policy and its challenges. *Journal of Public Health Policy*, *42*(3), 501–509. https://doi.org/10.1057/s41271-021-00287-w

Decentralization concepts and issues: a review. (1990). In A. Mills, J. P. Vaughan, D. L. Smith, & I. Tabibzadeh (Eds.), *Health System Decentralization: Concepts, Issues and Country Experience* (1st ed.). World Health Organization.

Deswal, B. S. (2016). Perspectives in Public Health in Indian Armed Forces: An Overview. *The Journal of Community Health Management*, *3*(1), 44–46. https://doi.org/10.5958/2394-2738.2016.00006.6

Dupas, P., & Jain, R. (2021). *Women Left Behind: Gender Disparities in Utilization of Government Health Insurance in India*. https://doi.org/10.2139/ssrn.3875139

Dutta, S., & Lahiri, K. (2015). Is provision of healthcare sufficient to ensure better access? An exploration of the scope for public-private partnership in India. *International Journal of Health Policy and Management*, *4*(7), 467–474. https://doi.org/10.15171/ijhpm.2015.77

Dwicaksono, A., & Fox, A. M. (2018). Does Decentralization Improve Health System Performance and Outcomes in Low- and Middle-Income Countries? A Systematic Review of Evidence From Quantitative Studies. *The Milbank Quarterly*, *96*(2), 323–368.

Everybody's Business: Strengthening Health Systems to Improve Health Outcomes. (2007). World Health Organization.

Expert Committee on Tribal Health. (2018). Organization of service delivery and the roadmap. In *Tribal Health in India: Bridging the Gap and a Roadmap for the Future*. Ministry of Health & Family Welfare.

Fryatt, R., Bennett, S., & Soucat, A. (2017). Health sector governance: Should we be investing

more? *BMJ Global Health*, *2*(2), 1–6. https://doi.org/10.1136/bmjgh-2017-000343

Garg, S., & Laskar, A. R. (2010). Community-based monitoring: Key to success of national health programs. *Indian Journal of Community Medicine*, *35*(2), 214–216. https://doi.org/10.4103/0970-0218.66857

Ghosh, S. (2018). Publicly financed health insurance schemes. *Economic and Political Weekly*, *53*(23), 16–18.

Gupta, R., Gaur, K., Mohan, I., & Khedar, R. S. (2018). Urbanization, Human Development and Literacy and Syndemics of Obesity, Hypertension and Hyperglycemia in Rajasthan: National Family Health Survey-4. *The Journal of the Association of Physicians of India*, *66*(12), 20–26.

Gupta, S., Chatterjee, A., Joshi, A., & Pakhare, A. (2021). Landscape analysis of supportive supervisory mechanisms in maternal and child health programs in India. *Preprints*, 2021110454.

Gurbani, N. (2017). Access to Quality Medicines and Health Products in Rajasthan. *Journal of Healthcare Communications*, *02*(04), 1–7. https://doi.org/10.4172/2472-1654.100082

Hazarika, N. (2015). Mohalla Clinics. *Mohalla, The Scheme, Clinics Concerns, Despite*.

Hernández, A. R., Hurtig, A. K., Dahlblom, K., & San Sebastián, M. (2014). More than a checklist: A realist evaluation of supervision of mid-level health workers in rural Guatemala. *BMC Health Services Research*, *14*. https://doi.org/10.1186/1472-6963-14-112

Hincapié, M. A., Gallego, J. C., Gempeler, A., Piñeros, J. A., Nasner, D., & Escobar, M. F. (2020). Implementation and Usefulness of Telemedicine During the COVID-19 Pandemic: A Scoping Review. *Journal of Primary Care and Community Health*, *11*(18). https://doi.org/10.1177/2150132720980612

India State-Level Disease Burden Initiative Collaborators. (2017). Nations within a nation: variations in epidemiological transition across the states of India, 1990–2016 in the Global Burden of Disease Study. *The Lancet*, *390*, 2437–2460. https://doi.org/10.1016/S0140-

6736(17)32804-0

International Institute for Population Sciences. (2020). *National Family Health Survey - 5: State Fact Sheet Rajasthan*. http://rchiips.org/nfhs/NFHS-5_FCTS/Bihar.pdf

Jacobs, A., Barnett, C., & Ponsford, R. (2010). Three Approaches to Monitoring: Feedback Systems, Participatory Monitoring and Evaluation and Logical Frameworks. *IDS Bulletin*, *41*(6), 36–44.

Jain, R. (2019). *The Effectiveness of Public Health Insurance: Evidence From Rajasthan, India*. Harvard University.

Jangir, H. P. (2019). Discrimination in Access To Health and Education: Narratives From Nat Community in Rajasthan. *Social Action*, *69*(July-September), 281–293.

Jeffery, R. (2021). Health policy and federalism in India. *Territory, Politics, Governance*, *0*(0), 1–19. https://doi.org/10.1080/21622671.2021.1899976

Joshi, N., Bhardwaj, P., Suthar, P., & Joshi, V. (2020). Study of feasibility and effectiveness of ASHA-Soft (Online Payment and Performance Monitoring System) program in Rajasthan. *Online Journal of Public Health Informatics*, *12*(1), e12. https://doi.org/10.5210/ojphi.v12i1.10662

JSA Rajasthan. (2021). *Recommendations to the Draft Right to Health Act*.

Karan, A., Negandhi, H., Hussain, S., Zapata, T., Mairembam, D., Graeve, H. De, Buchan, J., & Zodpey, S. (2021). Size, composition and distribution of health workforce in India: why, and where to invest ? *Human Resources for Health*, *19*, 39. https://doi.org/10.1186/s12960-021-00575-2

Khanna, R. (2013). *Ethical Issues in Community Based Monitoring of Health Programmes : Reflections from India* (Issue May).

Kho, J., Gillespie, N., & Martin-Khan, M. (2020). A systematic scoping review of change

management practices used for telemedicine service implementations. *BMC Health Services Research*, *20*(1), 1–16. https://doi.org/10.1186/s12913-020-05657-w

Kok, M. C., Vallières, F., Tulloch, O., Kumar, M. B., Kea, A. Z., Karuga, R., Ndima, S. D., Chikaphupha, K., Theobald, S., & Taegtmeyer, M. (2018). Does supportive supervision enhance community health worker motivation? A mixed-methods study in four African countries. *Health Policy and Planning*, *33*(9), 988–998. https://doi.org/10.1093/heapol/czy082

Kuziemsky, C. E., Hunter, I., Gogia, S. B., Lyenger, S., Kulatunga, G., Rajput, V., Subbian, V., John, O., Kleber, A., Mandirola, H. F., Florez-Arango, J., Al-Shorbaji, N., Meher, S., Udayasankaran, J. G., & Basu, A. (2020). Ethics in Telehealth: Comparison between Guidelines and Practice-based Experience -the Case for Learning Health Systems. *Yearbook of Medical Informatics*, *29*(1), 44–50. https://doi.org/10.1055/s-0040-1701976

Lahariya, C., Roy, B., Shukla, A., Chatterjee, M., De Graeve, H., Jhalani, M., & Bekedam, H. (2020). Community action for health in India: evolution, lessons learnt and ways forward to achieve universal health coverage. *WHO South-East Asia Journal of Public Health*, *9*(1), 82–91. https://doi.org/10.4103/2224-3151.283002

Lemma, S., Janson, A., Persson, L. Å., Wickremasinhe, D., & Källestål, C. (2020). Improving quality and use of routine health information system data in low- And middle-income countries: A scoping review. *PLoS ONE*, *15*(10 October), 1–16. https://doi.org/10.1371/journal.pone.0239683

Levesque, J. F., Harris, M. F., & Russell, G. (2013). Patient-centred access to health care: Conceptualising access at the interface of health systems and populations. *International Journal for Equity in Health*, *12*(1), 1. https://doi.org/10.1186/1475-9276-12-18

Liwanag, H. J., & Wyss, K. (2018). What conditions enable decentralization to improve the health system? Qualitative analysis of perspectives on decision space after 25 years of devolution in the Philippines. *PLoS ONE*, *13*(11), 1–20. https://doi.org/10.1371/journal.pone.0206809

Long, L., Pariyo, G., & Kallander, K. (2018). Digital Technologies for Health Workforce Development in Low- and Middle-Income Countries: A Scoping Review. *Global Health: Science*

and Practice, *6*(Supplement 1), 41–48.

Maier, C. B., Batenburg, R., Birch, S., Zander, B., Elliott, R., & Busse, R. (2018). Health workforce planning: which countries include nurse practitioners and physician assistants and to what effect? *Health Policy*, *122*(10), 1085–1092. https://doi.org/10.1016/j.healthpol.2018.07.016

Mikkelsen-Lopez, I., Wyss, K., & De Savigny, D. (2011). An approach to addressing governance from a health system framework perspective. *BMC International Health and Human Rights*, *11*(1). https://doi.org/10.1186/1472-698X-11-13

Ministry of Health & Family Welfare. (2021a). *Mobile Medical Units (MMUs)*. National Health Mission Components. https://www.nhm.gov.in/index1.php?lang=1&level=2&sublinkid=1221&lid=188

Ministry of Health & Family Welfare. (2021b). Mobile Medical Units Under NHM. In *Press Information Bureau*. PIB. https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1706005

Mitchell, M., & Kan, L. (2019). Systems Digital Technology and the Future of Health Systems. *Health Systems & Reform*, *5*(2), 113–120. https://doi.org/10.1080/23288604.2019.1583040

Mondal, S., Van Belle, S., & Maioni, A. (2021). Learning from intersectoral action beyond health: A meta-narrative review. *Health Policy and Planning*, *36*(4), 552–571. https://doi.org/10.1093/heapol/czaa163

Mounier-Jack, S., Mayhew, S. H., & Mays, N. (2017). Integrated care: Learning between high-income, and low- and middle-income country health systems. *Health Policy and Planning*, *32*, iv6–iv12. https://doi.org/10.1093/heapol/czx039

Mpofu, M., Semo, B., Jessica, R., Lebelonyane, R., Ludick, S., Matshediso, E., Sento, B., & Ledikwe, J. H. (2014). Strengthening monitoring and evaluation (M&E) and building sustainable health information systems in resource limited countries: lessons learned from an M&E task-shifting initiative in Botswana. *BMC Public Health*, *14*(1032), 8. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed13&NEWS=N&AN=25281354

Nambiar, D., & Sheikh, K. (2016). How a technical agency helped scale up a community health worker program: An exploratory study in Chhattisgarh State, India. *Health Systems and Reform*, *2*(2), 123–134. https://doi.org/10.1080/23288604.2016.1148802

Nandi, S., Prasad, V., Joshi, D., Chakravarthi, I., Murugan, G., Khan, S., Ashraf, M. A., Gupta, P., & Kumar, C. (2021). Public-Private Partnerships in Healthcare: Evidence from India. *Economic & Political Weekly*, *56*(36), 29–36.

National Health Mission. (2015). *Operational Guidelines for Mobile Medical Units*.

Neogi, S. (2020). Improving Access to Sterilization Services through Public Private Partnership: Cases from Rajasthan. *Online Journal of Health and Allied Sciences*, *19*(1), 1–6.

NITI Aayog. (2021). *Health States Progressive India: Health Index Round IV 2019-20* (Issue 4). http://indiabudget.nic.in/ub2013-14/eb/sbe47.pdf

Nittari, G., Khuman, R., Baldoni, S., Pallotta, G., Battineni, G., Sirignano, A., Amenta, F., & Ricci, G. (2020). Telemedicine Practice: Review of the Current Ethical and Legal Challenges. *Telemedicine and E-Health*, *26*(12), 1427–1437. https://doi.org/10.1089/tmj.2019.0158

Panda, B. K., & Mohanty, S. K. (2019). Progress and prospects of health-related sustainable development goals in India. *Journal of Biosocial Science*, *51*(3), 335–352. https://doi.org/10.1017/S0021932018000202

Patel, R., & Chauhan, S. (2020). Gender Differential in Health Care Utilisation in India. *Clinical Epidemiology and Global Health*, *8*(2), 526–530. https://doi.org/10.1016/j.cegh.2019.11.007

Rajbangshi, P. R., Nambiar, D., Choudhury, N., & Rao, K. D. (2017). Rural recruitment and retention of health workers across cadres and types of contract in north-east India : a qualitative study. *WHO South-East Asia Journal of Public Health*, *6*(2), 51–59.

Ram, U., Ram, F., & Kulkarni, P. M. (2021). The SRS Data on Early Childhood Mortality in India. *Economic & Political Weekly*, *56*(52), 18–20.

Rao, N. V., Downey, L., Jain, N., Baru, R., & Cluzeau, F. (2018). Priority-setting, the Indian way. *Journal of Global Health*, *8*(2), 1–7. https://doi.org/10.7189/jogh.08.020311

Rout, S. K., Sahu, K. S., & Mahapatra, S. (2021). Utilization of health care services in public and private healthcare in India: Causes and determinants. *International Journal of Healthcare Management*, *14*(2), 509–516. https://doi.org/10.1080/20479700.2019.1665882

Sagar, P. R. (2021, April 24). Land, sea and air: How the armed forces are helping India fight COVID-19. *The Week*. https://www.theweek.in/news/india/2021/04/24/land-sea-and-air-armed-forces-pitch-in-to-help-indias-fight-against-covid-19.html

Sah, T., Kaushik, R., Bailwal, N., & Tep, N. (2019). Mohalla Clinics in Delhi: A Preliminary Assessment of their Functioning and Coverage. *Indian Journal of Human Development*, *13*(2), 195–210. https://doi.org/10.1177/0973703019872023

Saini, T. C. (2020). Availability of Primary Health Facilities in Rajasthan: Spatial Analysis. *International Journal of Applied Social Science*, *7*(5–6), 240–250. https://doi.org/10.36537/IJASS/7.5

Seidman, G., & Atun, R. (2017). Does task shifting yield cost savings and improve efficiency for health systems? A systematic review of evidence from low-income and middle-income countries. *Human Resources for Health*, *15*(29), 1–13. https://doi.org/10.1186/s12960-017-0200-9

Selvaraj, S., Mukhopadyay, I., Bhat, P., Kumar, P., Aisola, M., Chokshi, M., Datta, P., Kumar, R., & Pachauli, C. (2014). *Universal Access to Medicines in India: A Baseline Evaluation of the Rajasthan Free Medicines Scheme*.

Seshadri, S. R., & Kothai, K. (2019). Decentralization in India's health sector: Insights from a capacity building intervention in Karnataka. *Health Policy and Planning*, *34*(8), 595–604. https://doi.org/10.1093/heapol/czz081

Sharma, N., & Anand, S. (2018). Mapping communitisation of health care system in Villages of Rajasthan and Uttarakhand; Exploring the role of Civil Society. *International Journal of Applied*

Social Science, *5*(7), 1065–1075.

Singh, A. (2007). Health Reforms in Rajasthan: An Empirical Study on Agencification. *Policy and Society*, *26*(2), 61–82. https://doi.org/10.1016/s1449-4035(07)70108-x

Singh, D., Prinja, S., Bahuguna, P., Chauhan, A. S., Guinness, L., Sharma, S., & Lakshmi, P. V. M. (2021). Cost of scaling-up comprehensive primary health care in India: Implications for universal health coverage. *Health Policy and Planning*, *36*(4), 407–417. https://doi.org/10.1093/heapol/czaa157

Singh, K., & Pal, B. L. (2015). Tehsil Wise Study and Analysis of Health Centers using GIS. *International Journal of Science and Research*, *4*(8), 1927–1937. www.ijsr.net

Singh, V., & Chauhan, N. (2021). Community Connection, Need Some Action for Health. *Journal of Development Communication*, *32*(1), 12–20. http://jdc.journals.unisel.edu.my/ojs/index.php/jdc/article/view/198

Strasser, R. (2015). Social accountability and the supply of physicians for remote rural Canada. *Canadian Medical Association Journal*, *187*(11), 791–792. https://doi.org/10.1503/cmaj.150266

Tabrizi, J. S., Azami-aghdash, S., & Gharaee, H. (2020). Public-Private Partnership Policy in Primary Health Care: A Scoping Review. *Journal of Primary Care and Community Health*, *11*, 1–17. https://doi.org/10.1177/2150132720943769

Technical Resource Group for the National Urban Health Mission. (2014). *Report and Recommendations of the Technical Resource Group for the National Urban Health Mission* (Issue February).

Thakur, L., & Singhal, A. (2016). Health Seeking Behavior of the Mothers Residing in Slums of Cities of Rajasthan: With Special Reference to Antenatal Care Services. *World Journal of Research and Review*, *3*(6), 55–59.

The Chhattisgarh Story. (2018). *By taking clinics to local haats, a district in Chhattisgarh is reinventing last-mile healthcare delivery*. The Chhattisgarh Story. https://chhattisgarh.yourstory.com/en/clinics-

to-local-haats-a-district-in-chhattisgarh-is-reinventing-healthcare-delivery

Thomas, M. B., & Rajesh, K. (2011). Decentralisation and Interventions in Health Sector: A Critical Inquiry into the Experience of Local Self Governments in Kerala. In *Working Paper Series* (No. 271).

Uppadhaya, S. K., Agrawal, N., Bhansali, S., Garg, K., & Singh, M. (2017). Utilization of antenatal health care services and its impact on birth weight of newborn in rural area of Western Rajasthan, India. *International Journal of Community Medicine and Public Health*, *4*(3), 680–685. https://doi.org/10.18203/2394-6040.ijcmph20170739

Vashistha, M. K., Tiwari, V. K., Sherin Raj, T. P., & Gandotra, R. (2018). Management and Implementation of Mukhyamantri Nishulk Dava Yojna in a District Hospital, Rajasthan: Perspectives, Issues and Challenges. *Journal of Health Management*, *20*(3), 309–324. https://doi.org/10.1177/0972063418779905

Vidler, M., Ramadurg, U., Charantimath, U., Katageri, G., Karadiguddi, C., Sawchuck, D., Qureshi, R., Dharamsi, S., Joshi, A., Von Dadelszen, P., Derman, R., Bellad, M., Goudar, S., & Mallapur, A. (2016). Utilization of maternal health care services and their determinants in Karnataka State, India. *Reproductive Health*, *13*(1). https://doi.org/10.1186/s12978-016-0138-8

Visaria, L. (2010). *Midwifery and Maternal Health in India: Situational Analysis and Lessons from the Field* (L. Visaria (Ed.); 1st ed.). IIM, Ahmedabad & Swedish Internaitonal Development Cooperation Agency.

Vitsupakorn, S., Bharali, I., Yamey, G., & Mao, W. (2021). Early Experiences of Pradhan Mantri Jan Arogya Yojana (PM-JAY) in India: A Narrative Review. In *Duke Global Working Paper Series* (No. 30; Issue March). https://doi.org/10.2139/ssrn.3797792

World Health Organization. (2011). *World Health Statistics*.

World Health Organization, & International Health Partnership. (2011). *Monitering, Evaluation, and Review of National Health Strategies: A country-led platform for information and accountability*.

ANNEXURE 1: STATUS OF HEALTH HUMAN RESOURCE AS ON OCTOBER '21

Sr. No.	Name of Post	Sanction	Working	Vacant
Clinical Cadre				
1	Medical Officer	467	224	243
2	GNM/Nurse grade-II	6113	3867	2246
3	ANM	4292	2642	1650
4	Pharmacist	851	521	330
5	Lab Technician	516	200	316
6	PHN (Public Health Nurse)	188	70	118
7	Community Health Officer	11341	7331	4010
8	Others	3226	2999	227
Sub Total		**26994**	**17854**	**9140 (34%)**
Managerial cadre				
1	State Level	135	106	29
2	District Level	2433	1697	736
3	Block Level	3124	2512	612

Sub Total	**5692**	**4315**	**1377 (24%)**
Total	**32686**	**22169**	**10517 (32%)**

ANNEXURE 2: KEY RECOMMENDATIONS AT A GLANCE

Governance

Main recommendation: Create a high-level group in CM Office – for health governance

Decentralized governance

- Support the reactivation and strengthening of VHSNCs with adequate capacity building of the members and outcome-based incentives for the committees to ensure they remain functional
- Pilot devolution of health financing, planning, monitoring to PRIs
- Create a support institution for decentralization/devolution of health system

Health financing

- Increase total expenditure on health as percentage of GSDP to at least 8%
- Invest in strengthening of public health systems with capital expenditure, taking into account the expenditure required for all facilities to meet the IPHS 2012 norms

Programme Management

Main recommendation: Institute a coordinating body – a PMU – to improve coordination between the NHM stream (centre) and the DHMS (state), as well as convergence between health-related sectors

Coordination and convergence

- Horizontal integration of the Rajasthan health system: integration of services, information, finance, planning, training, contracting
- Convergence with other related ministries such as Water and Sanitation, Women and Child Development, Food and Public Distribution, etc.

Monitoring of HR

- Utilize genuine supportive supervision, ACR-linked monitoring, and periodic review meetings for monitoring of HR

Monitoring and evaluation of programmes

- State-level monitoring and evaluation activities, including monitoring of rational treatments and quality control of health care services
- Development of a district-level monitoring and evaluation cadre
  - > Capacity building on data analysis, public health management
  - > Expanding role of data entry operator, with adequate remuneration; adding positions at PHC level

Data systems

- Establish a GIS that includes components of facilities, services, human resources, etc. to enable PMU functions
- Use disaggregated, block-level data for district health planning
- Develop a data dashboard for public domain with disaggregated data available for analysis
- Make parallel investments in technology upgradation, capacity building, and system of data quality assessment
- Data digitization at source with adequate capacity building for frontline workers
- Single, integrated HMIS to reduce duplication, conserve time and resources
- Increase data entry operator posts at PHC, regularize personnel, and provide adequate remuneration

Participatory monitoring and evaluation

- Strengthen VHSNCs and build capacities for participatory monitoring
- Involve CSOs in capacity building, mobilization activities
- Utilize the SHG platform for community-based monitoring

Public Health Facilities

Main recommendation: Urgent geospatial mapping (every district, every facility) required to enable rationalization of location to fulfil population norms

Location
- Geospatial mapping of facilities by location.
- Geospatial mapping should include facilities of potential partner agencies such as the Armed Forces, ESIC and not-for-profit organizations (e.g., NGOs and Mission Hospitals).
- Rationalization of facilities to also ensure that the services match the current gap and demand, for instance, in access to institutional delivery, contraceptive and child health services

Infrastructure
- Funds be made available for structural improvement and infrastructure upgradation, including for the development of staff quarters on-site
- Facilities upgraded from a lower to higher tier require urgent funding to upgrade infrastructure in line with norms
- High priority be accorded to making basic infrastructure, such as toilets, functional at all facilities
- User fees at any public health facility be made obvious through conspicuous signage. Citizen's charters be displayed prominently

Collaborations and PPPs
- Scoping exercise and engagement with Armed Forces, Railways, ESI to provide services in remote, border, desert areas
- Limited and careful use of PPPs in healthcare with stringent screening and selection, conducted by an independent panel
- Not-for-profit agencies with public health expertise and experience to be given preference

Improving access for specially vulnerable populations and innovations
- Redefine norms for facilities on the basis of commute time and distance
- Adherence of mobile services with national guidelines and investments in HR and equipment
- Scoping exercise to determine utility and feasibility of 'Haat' clinic model in remote areas
- Rigorous evaluation of Janta clinics to determine adequacy of HR, utilization patterns, outcomes, and cost-effectiveness, followed by scale-up through a sustainable financing model

Health Services and Schemes

Main recommendation: Revisioning of the health system: recreating relevance for the three-tiered system keeping public health services, including telemedicine, in mind

Broad services
- Geospatial mapping of services per location
- Context-based rationalization of services for institutional deliveries
- Telemedicine, as detailed further, can be one approach to rationalization
- Supportive supervisory mechanism to be instituted at all levels with periodic field visits
- Incentive of relaxation in cut-off marks for PG entrance be linked to performance
- ACRs to be linked to outcomes and have performance-based indicators
- Annual 'surprise' prescription audit of a proportion (10%) with detailed, disaggregated analysis of prescribing practices
- Restrict unwarranted prescriptions for medicines that are not available under MNDY
- Capacity building of all personnel on rational prescription
- Development of SoPs, STGs, protocols and capacity building on the same
- Participatory, decentralized planning and monitoring mechanisms to improve quality and acceptability

State-specific schemes and programmes
- Expansion of the scope of MNDY and MNJY
- Quick upgradation of scheme-related equipment and infrastructure for upgraded facilities
- Stricter regulation of private sector in relation to the insurance scheme to ensure adoption of all packages and discourage cherry-picking
- Strict monitoring of OOPEs within the scheme
- Strengthen public health facilities as a more cost-effective, rational approach to service delivery, especially in rural areas
- Allow flexibility for proof of identity allowing for non-biometric identification, identification that does not entail proof of residence in the case of migrant, slum and homeless populations

Telemedicine
- Only health worker-doctor or doctor-doctor teleconsultations.
- Continuity of care from point of entry
- First consultation should be physical
- Permanent infrastructure and equipment at all facilities meant to provide telemedicine
- Fixed slots of doctors and specialists by rotation
- Development of STGs, SOPs, protocols
- Capacity building of personnel at ALL levels
- Ethical considerations of telemedicine addressed

Human Resources for Health

Main recommendation: Develop and implement a comprehensive, fair, transparent HR policy

Rational usage of HR

- Rationalize HR to services and facilities as per identified gaps and needs
- A comprehensive, fair and transparent HR policy with political will is imperative to achieve the above

Recruitment, particularly for rural, remote areas

- Allow lateral entry of specialists into the system
- An increase in educational institutions in all districts, including tribal and backward areas with service bonds
- Medical education curriculum should include more practical exposure to the field to encourage rural posting
- Recruitment of health workers from local communities
- Regularization of staff throughout the system
- Increase number of data entry operator posts with better remuneration

Retention and motivation

- Use of 'hardship' posting concept similar to that in Armed Forces to increase motivation for rural service
- Staff quarters within the premise or close to the facility must be created along with other infrastructure to enable a decent quality of life for health personnel positioned in remote and rural areas
- Regularization of staff throughout the system
- Performance-based incentives linked to promotions and postings
- Annual Confidential Reports (ACRs) should be a genuine tool for career progression
  > ACR should be in electronic mode to enable easy access for reviews and feedbacks.
  >Public health functions should be included as one of the indicators in the ACR, to ensure delivery of primary health care services.
- Relaxation in cut off marks for post-graduation to be linked with performance based on their ACR
- The PG entrance exam itself needs to give due importance to practical field experience that has been gained by the in-service applicants to create a level playing field
- Capacity building of medical officers on public health management and of non-medical officers on public health

Optimization and task shifting

- Task-shifting and upskilling of locally recruited health workers to increase efficiency
- The IMNCI process and experience may be brought to play for all health issues such as non-communicable diseases as well as common illnesses and primary trauma care.
- Training and capacity building, especially using protocols and standard guidelines and supportive supervision from the higher levels would be required to establish such systems.
- Telemedicine would provide support to these upskilled health workers engaged in public facilities

Community health workers

- Regularize posts of CHWs with adequate remuneration and employment benefits
- Facilitate transportation and logistics to support ANMs in their field work
- Revival of MPW (M) post