Strengthening Essential Laboratory Services in Public Health Facilities in Chhattisgarh State - A Case Study

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Background: Chhattisgarh is one of the younger states in the country. The state was formed in year 2000. It was one of the poorest states in the country with a third of its population belonging to the scheduled tribes. Chhattisgarh currently has a population of around 28 million of which 77% is rural. Scheduled Tribes constitute 31% of the population whereas Scheduled Castes are 11% of the population. 44% of the state's geographical area is covered with forests. It has 27 districts which are divided into a total of 146 blocks. 85 of the 146 blocks are classified as Tribal blocks. In terms of poverty head-count and the per capita consumption expenditure, Chhattisgarh figures amongst the poorest states in India. The Planning Commission in 2011 estimated that in the Chhattisgarh state 39.93 % of the total population is estimated BPL, with 70% of the population living in low socioeconomic conditions [1].

The state at the time of its birth was at the bottom amongst the states in India in terms of health indicators like the Malnutrition rates, Infant Mortality Rate (IMR) and Under-5 Mortality Rate. The state had inherited an under-developed health system with inadequate infrastructure and severe shortage of qualified human resources for healthcare. Over the last 17 years since its formation, the state has made significant progress in developing its health system and healthcare services. The state is known for its innovative HR development and community processes.

The state has now moved close to national average in terms of the health outcome indicators like IMR. In terms of service indicators also, the state has reached close to the national average for many of the essential primary-care services like immunization and ante-natal care. State also has a universal insurance scheme to provide in-patient services up to Rs. 50000 cover.

Although the state has made rapid progress in expanding coverage of basic healthcare services, the state faces several public health challenges. The key public health challenges include: a) Communicable diseases including Malaria, Leprosy, TB, Hepatitis E, ARI b) Maternal and

perinatal conditions requiring emergency care c) Non-Communicable diseases including Hypertension, Diabetes, COPD, Sickle Cell Disease, Epilepsy, Mental Illnesses [2].

Diagnostic services play a very critical role for the disease management at both individual and population level. The availability and use of diagnostic services plays a critical role in health decision making, and the lack of these services is one of key obstacle for timely detection and treatment-initiation for majority of the diseases. When disease burden is high and large part of population is below poverty line it is further important to understand the level of health care cost in diagnostic services. A study done by Alam et.al.(2009) on out-of-pocket (OOP) household expenditure on diagnostics in UP, Rajasthan and Delhi remains in most cases between 5 to 7 percent of the total budget [3].

It was also the mandate of National Health Mission (NHM) to roll out 'Free Diagnostic Services' for people in need of essential diagnostic services to be able to access them free of cost in the "available" public health facilities [4]. Primarily aim was to reduce OOP expenditure on diagnostics, and to encourage rational decision making for clinicians regarding treatment and disease management by increasing the access of the population to these services.

Purpose of the Case Study –

Relevance: In order to improve Laboratory services in Public facilities of Chhattisgarh, State Health Resource Centre (SHRC) started a project in collaboration with the Directorate of Health in 2015. The state has also seen multiple attempts to outsource the provision of diagnostic services to private-sector Labs but they are yet to bear fruit. The state finds itself in a dilemma in deciding its strategy for providing essential diagnostics. It is at a point where it has to make a choice between a strategy largely based on strengthening existing labs in public facilities or to go for outsourcing. The option of choosing a mixed strategy is also open. A state budget funded scheme has been announced this year along with the NHM-funded initiatives for Free-Diagnostics.

Aim: This case study aims to document and analyze the experience of strengthening public labs as well as of the attempts to outsource the function. It seeks to identify the advantages and challenges in both approaches in light of the experience and to compare the two options.

Methods and Data Collection: Considering that the aim was to analyze experience of the state, case study has been chosen as the suitable method here. The attempt is to analyze a variety of evidence and to triangulate it across data-sources while constructing the narrative.

The Case Study includes the following analysis:

a) Situational Analysis of Government Lab services in Chhattisgarh
b) Analysis of experience of strengthening project
c) Analysis of experience regarding attempted outsourcing of diagnostic services in Chhattisgarh
d) Comparison of costs

For the situational Analysis, the following kind of data-collection and analysis was carried out:

- For HR availability, secondary data from Administrative reports of Health Department and Approved Plans of NHM was used
- Written Reports by District Chief Medical Officers for used for equipment availability
- CGMSC list of reagents procured from its website
- Data collection from Public facilities about number and type of tests done, user fees, OPD and IPD numbers.

For analyzing the experience of strengthening project, the following data analysis was done:

- Analysis of Directorate and SHRC documents on collaborative project of strengthening labs
- Data collection about number and type of tests done, user fees, OPD and IPD numbers, from Public facilities where intervention was made
- Analysis of Quality Assurance checklists (for Labs) filled by SHRC consultants through facility-visits
- Qualitative Interviews with Lab Technicians
- Qualitative Analysis of discussion in meetings with Medical Officers, Block Medical Officers, Chief Medical Officers, Collectors, State officials of Health Department
- Participant observation by SHRC staff involved in strengthening project (authors) and interviews of other SHRC staff involved

For analysis the experience of attempted outsourcing, the following analysis was done

- Review of NHM Guidelines for Free Diagnostics Initiative for list of tests recommended as well as choice between in-house strengthening and outsourcing, Review of IPHS Guidelines on desired tests
- Review of Request for Proposal (RfP) document put out in Chhattisgarh for attempted outsourcing

- Review of civil society documents
- Review of discussions in state level meetings of health-officials

For cost-analysis, the following data was collected:

- CGHS Rate Lists for tests
- Rate list documents from non-profit hospitals
- Rate lists of Rogi Kalyan Samitis in public facilities

Situational Analysis of Laboratory Services in Public Facilities in Chhattisgarh:

1. **Availability of Laboratory Technicians –**

   State has 1704 sanctioned posts of Laboratory Technicians (LTs). Two-thirds of the posts are regular and rest are sanctioned as Contractual posts under different programmes. 78% of sanctioned posts are filled and rests are vacant [5]. The proportion of vacancies is similar for Regular and Contractual posts.

Programme	Sanctioned posts of LTs	Filled posts	Vacant posts
Directorate Health Services (regular posts)	1146	868 (76%)	278 (24%)
NHM (Contractual posts)	278	252 (91%)	26 (9%)
RNTCP	140	120 (86%)	20 (14%)
NVDCP	48	24 (50%)	24 (50%)
NUHM (Contractual posts)	36	28 (78%)	8 (22%)
NCD (Contractual posts)	56	40 (71%)	16 (29%)
Total	**1704**	**1332 (78%)**	**372 (22%)**

(Source: Regular Posts from Administrative Report 2017-18 DoHFW, Contractual posts NHM PIP)

As per IPHS standards, there should be 3 LT per Community Health Centre (CHC) and 6 per District Hospital (DH) and the total requirement for Chhattisgarh based on these norms is 690. State has 724 numbers of LTs posted in DHs and CHCs which is more than adequate as per the IPHS norms [6].

Facility	No. of posts required as per IPHS standards	Filled Posts (Regular)	Filled Posts (Contractual)	Total Filled Posts
DH (26)	156	130	99	229

CHC (160)	480	337	158	495
Total	636	467	257	724

According to IPHS, each PHC should have one LT. State has 793 Primary Health Centers (PHCs) in which 608 LTs are posted (77%).

While the no. of total posted LTs seems adequate, there are issues of non-optimal distribution of LTs across facilities. Certain facilities have more than proportionate share of LTs posted even when there is no evidence of higher caseload.

Another issue in the state is regarding regulation of LT courses. The state has enough availability of DMLT (Diploma in Medical Laboratory Technology) but it is not recognized by the State paramedical council.

1. **Training of laboratory technicians**: A large proportion of LTs recruited have done one year certificate course on clinical pathology. On-the-job trainings are conducted for technicians posted under vertical programmes.
2. **Availability of equipments:** In state supply of major laboratory equipments are through Chhattisgarh Medical Services Corporation (CGMSC). Status of laboratory equipments available at CHC and District Hospital (data updated up to October 2017) is given below[7]:

Availability of equipment in DH and CHCs					
Facility	CBC Machine	Semi Auto analyzer	Electrophoresis Machine	Centrifuge machine	Electrolyte analyzer
District Hospitals (n=26)	20	24	14	24	12
CHCs (n=160)	8	60	32	139	13

3. **Reagents and Consumables:** In the state, supply of laboratory reagents and consumables is decentralized and most are purchased at district level. Districts are provided funds through state budget and facilities supplement them through Rogi Kalyan Samiti charges.

   State through CGMSC provides rapid diagnostic kits like pregnancy test, RPR, HIV, malaria, urine sugar and albumin by dipstick tests etc. CGMSC also supplies reagents for Sputum-microscopy, hemoglobin, blood group, and some of the necessary consumables like pricking needles, hemocytometer, glass slides, test tubes and Hb tube. These account for around 30% of the overall reagent-consumable requirement.

   Frequent gaps have been observed in availability of essential laboratory consumables and reagents.

4. **User fees for diagnostic services:** Public facilities charge user fees for diagnostic services except tests required for ante-natal care, malaria, sickle-cell and TB. The user fees are fixed by Rogi Kalyan Samitis and vary from facility to facility. A comparison of fees for diagnostics services of two CHCs of different districts is given below[8]:

Sl.	Name of test	CHC-Narmadapur, Surguja (Fees in Rs.)	CHC-Vishrampuri, Kondagaon (Fees in Rs.)
1	Hemoglobin	20	10
2	TLC/DLC	20	20
3	ESR	20	50
4	WIDAL	40	50
5	Blood Sugar	50	50
6	VDRL	60	50
7	Blood group	20	50

5. **Volume and Variety of laboratory services provided** –

   Data of 6 DHs, 23 CHCs and 30 PHCs of the state was analyzed to assess the volume coverage of diagnostic services in the state [7]. CHCs and DHs are covering around the same volume whether PHCs are covering half of CHCs and DHs.

   High end pathology, biochemistry and microbiology tests are not being covered and not provided.

Health facility	**Volume coverage (No. of Tests per Patient)**	**Tests which are being provided in inadequate numbers**
DH	1.01	• Culture sensitivity, electrolytes, Thyroid function test, some serological tests
CHC	0.92	• CBC, RFT, LFT, Lipid profile, TSH, stool test
PHC	0.53	• TLC/DLC, Platelets count, Stool test, ESR

Efforts to Strengthen Essential Diagnostics in Public Facilities in Chhattisgarh:

In 2013, State Health Resource Centre (SHRC) of Chhattisgarh carried out a rapid-assessment of diagnostic services in two divisions of the state. The assessment indicated that while the availability of Human Resources (LTs) was close to adequate, many services were not getting provided due to various gaps, including in skills of LTs [8]. With a view to strengthen the services in public facilities, SHRC and Directorate of Health collaborated to undertake a project in 2015. The state government initially funded it through the European Commission Sector-Partnership Programme. The following interventions were the key interventions made under the intervention:

- **Preparing a recommended list of Tests for each type of facility and list of equipments and reagents:**

  A list of essential diagnostic tests for each level of facility was prepared using consultation of experts and IPHS. A list of equipments and reagents required to perform these tests was also prepared (Annexure 1).

- **Revising training module for LTs:**

  SHRC had prepared a training module (in Hindi) about a decade ago for LTs, which was revised in consultation with experts.

- **Training of Laboratory technicians:**

  SHRC created a collaboration with newly set-up AIIMS, Raipur. It was aimed at building skills amongst LTs employed in public facilities of the state. In 2015, a 6 days hands-on training of LTs was started at AIIMS. The training covered basic services in pathology, biochemistry and microbiology. 237 LTs were trained. 200 of them belonged to DHs and CHCs, thus covering around one-third of the total workforce in facilities of this level. Atleast one LT was trained from each DH and CHC of the state. The rest of the LTs trained were from PHCs.

  Pre training and post training test were taken to assess the skills and knowledge of Lab Technicians. The mean score was 30% in pre-test and it improved to 67% in post-test. The qualitative feedback from LTs showed that getting trained improved their motivation to provide better services and the training being done in a centre of excellence (AIIMS) was helpful in improving skills as well as motivation.

- **District-level Workshops for Problem-solving:**

  Workshops were conducted in districts after skill based training of LTs. It was aimed to involve the various health-officials at district and block level in addition to LTs. Collectors were also invited to chair the workshops so that the importance of diagnostic services gets better appreciated. One output from the workshops was to identify local gaps and find collective solutions to the problems. The key such gaps were related to procurement of essential commodities (equipments, reagents and other supplies) for diagnostic services, installation of equipments and training in using them, maintenance of equipments, rationality of diagnostics prescribed, quality assurance of laboratories, monitoring free diagnostics, need for mentoring of LTs etc. In addition, the workshops also pointed out gaps which could be solved through state-level interventions.

  The first two workshops were in tribal districts of Surguja and Kondagaon. Later two more districts were covered. SHRC was given the mandate to cover all districts.

- **Quality improvement of district hospitals on NQAS:**

  District hospital laboratories (secondary care hospitals) were facilitated to improve their quality parameters in compliance to National Quality Assurance Standards (NQAS). Consultants visited two district hospital laboratories periodically for the assessment of quality indicators and worked-out corrective actions in consultation with facilities.

Outcomes from the Intervention:

Assessment for improvement in laboratory services

Baseline data of laboratory services was collected before training in two districts of the state i.e. Kondagaon and Surguja. Another round of assessments were done at a gap of one year after training. From each district 10 PHC, 5 CHC and District Hospitals were taken for assessment.

Volume of laboratory services at District Hospitals (n=2) (Kondagaon and Surguja)		
Tests performed	**Pre Intervention (March-May 2015)**	**Post Intervention (July-Sept.16)**
Average OPD/month	**11420**	**11595**
Average IPD/month	**2239**	**2253**
Average No. of test/month	**11476**	**18556**
Average No. of test/day	**470**	**742**
Average No. of tests/patient	**0.84**	**1.34**

- After intervention there is a 57% increase in average number of test per day in district hospitals. Surguja district hospital emerged as an example of well functioning government lab at DH level.
- Numbers improved for a variety of tests in DHs. Kondagaon DH where biochemistry tests of RFT, LFT and lipid profile were not happening at all before, got started.

Variety of laboratory services at District Hospital (Kondagaon & Surguja)		
(No. of Tests per 100 patients)		
Hemoglobin	18	17
TLC/DLC	2	10
ESR	2	8

Sickle cell test	3	3
VDRL	3	2
Absolute Eosinophil count	2	3
Total RBC Count	2	10
Peripheral blood count	0	8
BT/CT	1	4
Urine-Bile Pigment	2	5
Urine- Albumin, sugar	6	6
Blood group/Rh type	7	6
Stool analysis	1	2
Pathology –sub total	**49**	**84**
Malaria	13	10
WIDAL	3	3
Pregnancy	2	2
Blood Sugar	5	9
TB	4	3
HIV	5	4
HBS Ag	1	3
Microbiology –sub total	**33**	**34**
RA factor	1	2
ASO Factor	1	2
RFT	1	7
LFT	1	5
Lipid profile	1	2
Biochemistry –sub total	**5**	**18**

Volume of laboratory services at CHCs (Kondagaon & Surguja)l n=10		
Tests performed	**Pre Intervention**	**Post intervention**
	(March-May 2015)	**(July-Sept.16)**
Average OPD/month	**1517**	**1620**
Average IPD/month	**174**	**186**
Average No. of tests/month	**1488**	**2474**
Average No. of tests/day	**59**	**98**
Average No. of tests/patient	**0.88**	**1.37**

Variety of laboratory services at CHC (Kondagaon & Surguja)		
(No. of Tests per 100 patients)		
Hemoglobin	16	22
TLC/DLC	0	3
ESR	1	3

Sickle cell test	2	5
Platelets count	0	2
Absolute Eosinophil count	0	2
Total RBC count	0	2
BT/CT	0	2
Blood group/Rh type	7	7
Urine- Albumin, sugar	7	10
Urine-Bile salt,Pigment	0	2
Pathology –sub total	**33**	**60**
WIDAL	8	11
Pregnancy	1	3
TB	2	4
HIV	3	3
Malaria	36	40
VDRL	1	2
HBSAg	0	3
Microbiology- sub total	**51**	**66**
Blood Sugar	4	9
RA Factor	0	1
Biochemistry –sub total	**4**	**10**

- After intervention there is a 66% increase in average number of test per day in CHCs. Farasgaon CHC (in Kondagaon) and Udaipur and Sitapur CHCs (in Surguja) showed close to ideal performance levels.
- Variety of tests improved with type of tests being conducted in CHCs increased from 12 to 20.
- Availability of reagents and consumables improved as it was purchased locally by Rogi Kalyan Samiti of hospital.
- Biochemistry tests like RFT, LFT were not started in most CHCs because of gaps in availability of semi-auto analysers and their installation. Non-availability of reagents for such machines was another bottleneck. LTs had been trained by SHRC in using Colorimeters but were reluctant to use them in day to day practice and large share of colorimeters were in non-use.

Volume of laboratory services at PHCs (Kondagaon & Surguja) n=20		
Tests performed	**Pre Intervention (March-May-2015)**	**Post Intervention (July-Sept.-16)**
Average OPD/month	**656**	**716**
Average IPD/month	**12**	**14**

Average No. of tests/month	**321**	**522**
Average No. of tests/day	**13**	**20**
Average No. of tests/patient	**0.48**	**0.72**
Variety of laboratory services at PHC (Kondagaon & Surguja)		
(No. of Tests per 100 patients)		
Hemoglobin	**8**	**14**
TLC/DLC	**0**	**2**
Platelets count	**0**	**1**
Sickle cell	**0**	**3**
Malaria	**30**	**33**
Blood group/Rh type	**2**	**3**
Urine- Albumin, sugar	**3**	**5**
WIDAL	**2**	**5**
Pregnancy	**3**	**3**
Blood Sugar (using Glucometer)	**1**	**4**
Total	**49**	**73**

- After intervention, there is a 61% increase in average number of tests per day in PHCs.
- Variety of tests increases from 7 to 10. After training they started Sickle cell solubility, TLC/DLC and Platelets count using microscopy. The quality of conducting tests and management of laboratory improved. No. of WIDAL tests improved.

Quality Assurance status of district hospital laboratories - In 2015 the total quality score was 39.32% and after 2 years of supportive supervision and handholding it improved to 58.34%. Quality management and infection control parameters continue to be major concerns.

Laboratory Assessment Summary		Baseline (2015)	After corrective action (2017)
TOTAL SCORE		39%	58%
1	Service provision	58%	68%
2	Patient Rights	61%	79%
3	Inputs	37%	57%
4	Support Services	36%	70%
5	Clinical Services	39%	67%
6	Infection Control	34%	54%
7	Quality Management	7%	29%

Is the improvement enough? - Comparison with Rajasthan:

There is 58% increase in volume of services in post training assessment of laboratory services, combined for DHs, CHCs and PHCs assessed in two districts of Chhattisgarh. They could reach a volume of 1.32 Rajasthan, one of the better performing states in essential diagnostics provision, has a better ratio at 1.70 tests per patient [9].

Proportion of volume Surguja and Kondagaon is covering in comparison to Rajasthan in (PHCs+CHCs+DHs)			
Particulars	**Pre-intervention 2 districts of Chhattisgarh**	**Post-Intervention 2 districts of Chhattisgarh**	**Rajasthan – all districts**
Average Patient/test ratio (PHC+CHC+DH)	**0.83**	**1.32**	**1.70**

Challenges Faced:

1. **Underdeveloped mechanism for supply of reagents and consumables:** LTs trained by SHRC often complained about missing reagents especially for machines like biochemistry-analysers. Chhattisgarh has not yet developed a streamlined system for procurement or supply of laboratory reagents and consumables. There is no demarcation between what will be centrally procured (through CGMSC) and what items need to be procured by districts. Allocation of funds to facilities is poorly related to their caseload. As a result, there is a dependence upon user fees collected through RKS, especially in DHs and busier CHCs. Many districts lack the capacity to procure many of the essential items, especially the newer districts.
2. **Installation of Equipments:** The equipment suppliers are responsible for installation of equipments and training the LTs in their use. However, in actual practice, many types of equipment are delivered to the concerned district/facility in their stores and are left uninstalled and LTs remain untrained in using them. Often the district officials did not monitor which equipments were lying uninstalled. In the intervention districts, such gaps were identified and pointed out to officials. It was seen that nobody in the districts had information on how to contact the suppliers for getting installation completed, nor did they get any support from CGMSC to do so.

   Availability and installation of equipments is a poorly monitored aspect. The records at CGMSC of equipments supplied were found to be incomplete. In 2014, the state had contracted a separate agency for mapping all equipments in public facilities at a cost of Rs.60 Lakh. However, the mapping was not put to use. An analysis of the mapping was done by SHRC and it was found to be poorly designed and incomplete.

   As part of the SHRC-Directorate collaboration on improving diagnostics, availability of 5 key equipments in DHs and CHCs was mapped by taking reports from 26 out of 27 districts. Further data was collected by asking the LTs and concerned facilities about the

status of their installation. It showed that 22 of the 60 CHCs supplied with semi-auto analysrs (biochemistry) had not installed them. Some of them had these equipments lying uninstalled for a period of more than a year.

3. **Maintenance and repair of equipments:** CGMSC purchases the equipments with AMC charges built into the purchase-contract. However, in actual practice, little maintenance support gets provided. There is little monitoring of by District Health Officials of which equipments need repair.

   There is no Equipment Maintenance Cell in the state at any level to install and repair laboratory equipments. Biomedical Engineers have been recruited (under NHM) for most of the districts but their abilities in managing equipments are yet to be tested or developed. About 8 years ago, the state had attempted to set-up an Equipment Maintenance System by constituting a cell under an independent consultant contracted by SHRC. SHRC was supposed to make the cell functional and then hand it over to DoHFW. However, the experiment did not work due to problems with the consultant contracted. Around the same time, CGMSC was being formed and maintenance of equipments was thought to be one of its roles. CGMSC chose the path of purchasing equipments with AMC charges built-in. However, the implementation of AMC and its follow-up by CGMSC remained under-developed.

4. **Rationality of diagnostic prescriptions:** Many of the trained LTs contended that some of the essential tests were not getting conducted because the Medical Officers (MOs) were not prescribing them. It was suggested that MOs should also be oriented on rational use of diagnostics. However, the training is yet to materialize for MOs. In addition, there were allegations about a few facilities that there was collusion with private-labs which resulted in private-labs getting referrals, especially of tests with comparatively higher profit-margin.

5. **Quality management and leadership:** Standard Operating Procedures were poorly known in Labs and facilities. Quality management of laboratory services was found to be a neglected aspect. It is low on priority of the leadership in facilities. NQAS like interventions did help but required continued engagement by external/state-level consultants.

6. **Inadequate monitoring mechanism**: There is no system for Laboratories to report their performance. It does not get covered in any of the review processes at Block, District or State level. There are no designated Nodal Officers responsible for Laboratory services at

any level – State, District or Block. Lack of allocation of responsibility to specific officers limits monitoring as well as leadership roles necessary to develop lab-services. Different vertical programmes do pay relatively better attention to their components related to laboratory services, but it was more prominently visible in case of more established and older programmes like RNTCP and NVBDCP.

In the intervention districts, it was found that the district workshops under senior officers did help in improving performance but it was difficult to sustain it.

Attempts in Chhattisgarh to Outsource Diagnostic Services to Private Laboratories:

I. Experience of First Attempt to Outsource:-

In 2013 Chhattisgarh State Government put out a Request for Proposal (RfP) for outsourcing of laboratory and radiology services in public health facilities. Its scope was to cover all DHs and CHCs as well as the PHCs considered as 24x7 in 2013. Outsourcing of 379 facilities was attempted.

Three levels of Diagnostic Centers were visualized:

- Category A - consisting of all District Hospitals with 100 or more beds
- Category B - consisting of new District Hospitals, all FRU level Community Health Centers and Civil Hospitals
- Category C - consisting of non-FRU CHCs and 24x7 Primary Health Centers

The initial RfP invited separate bids for the four Divisions of the state - Bastar, Raipur, Bilaspur and Sarguja. However, no bids came in for two divisions Bastar and Surguja, which are the most deprived regions of the state with largely tribal population in remote rural areas. In order to force the bids to include the remote divisions, the RfP was amended to divide the state into two parts – Area 1- Sarguja along with Bilaspur division and Area 2- Bastar along with Raipur division. The repeated bidding could not take place.

There was a critique of the RfP by civil society (ref-PHM). An assessment was carried out by NHSRC as well.

The main gaps pointed out with the RfP were:

- The RfP was not based on any study or analysis of existing laboratory services, their gaps or causes of gaps. Laboratories which were performing well were also being outsourced. The fact that most of the required HR posts (LTs) were already filled was

getting ignored and the outsourcing was being justified on false grounds that HR is deficient.

- The list of services selected for outsourcing did not match the capacity of facilities to make use of them. E.g., most of the PHCs in the state did not have any MOs but X-Rays were included in the PHC list.
- The laboratory services under outsourcing were to be free for BPL patients but not for others. It was assumed that the costs of outsourcing would get covered through RSBY, ignoring te fat that RSBY was limited for in-patient care and BPL at that time.
- Evidence from outsourcing experience from other states (eg Bihar) was ignored. Bihar experience had shown that costs under outsourcing tend to be far higher than anticipated, quality suffers, turnaround time for test-results is high, government LTs become under-utilised and pre-existing functional government-labs stop performing.

As the criticism of the outsourcing design gained strength, the state decided to abandon the RfP.

II. **Recent plan to Outsource Diagnostics in a Medical College Hospital in Chhattisgarh**

As per newspaper reports (Patrika, 29.1.2018) the building had been constructed as AYUSH Bhavan with European Commission funds. The handing-over of the building and diagnostics services to a private agency was being resisted by the government diagnostic lab staff, health employees union, and civil society groups. It reported that the building was being given to the private player free of cost without any lease agreement or MoU. A previous article (Patrika, 24.1.18) reported a direct conversation with the Jila Panchyat CEO who said that the private lab will not provide the diagnostic services for free. He also accepted that there has been no official lease agreement or MoU with the private company. The papers did report that the outsourcing will most probably be stalled.

As per the government LTs, the private lab has not been able to start functioning as it has been unable to get registered under Clinical Establishment Act, for the reason that the private lab did not have any papers to show the transfer of building to them.

According to the staff of the the private agency involved, they are a Vishakhapatnam based company called Noble Health Care. No information about the agency was available on the web. According to the staff of private agency, there are two fixed packages of Rs 295 and Rs 495 under which multiple tests (around 20) would be done. Even if anyone wants to get

one test done, the full package rate would apply and for which 4 ml of blood would be taken. They hope to get all the RSBY cases in the medical college hospital. The hospital would then pay per patient from their RSBY/MSBY insurance claim amount.

The above attempt of partnering a private laboratory is not a state-level decision but a district-level one. The district administration and the hospital took the decision. The Government lab in the hospital is already providing all the required pathology tests. On radiology side, there is a need to increase its capacity to meet the caseload. The rationale for outsourcing is not clear given that the hospital already had the necessary in-house capacity.

III. **Current Dilemma in the state:** Government of India has brought out guidelines for Free Diagnostic Initiatives under NHM. It suggests strengthening of in-house government services and outsourcing for 'High-Cost Low-Volume' services. The document however does not indicate which tests are likely to be 'High-Cost Low-Volume' and therefore suitable for outsourcing. There is also an error in numbering an Annexure which can give a wrong impression that the entire list of essential tests needs to be outsourced. Reviews by NHM (GoI) also emphasized the outsourcing part and the discussions on which set of diagnostics to be outsourced have been incomplete.

This year (201-198) Chief Minister of Chhattisgarh has announced Rs.30 Crore budget for Free Diagnostic scheme in the state in his budget speech, out of which around 60% will be for laboratory services and rest for radiology services. A proposal has been developed by the directorate to outsource the diagnostic services. The outsourcing proposal includes most of the tests.

However, there is still a dilemma regarding whether Outsourcing will be the best path to take. One source of dilemma is regarding the future of existing laboratories in government hospitals and staff working in them. There is also confusion regarding which tests to be included as 'High-cost low-volume' and to be considered for outsourcing. There is an openness to learn from the best practices from states like Tamilnadu and Rajasthan.

IV. **Comparing the costs:** Comparison of cost to provide full package of laboratory services using CGHS and Not-for-profit unit costs. Cost was calculated for a CHC, assuming 115 OPD per day on average. CGHS cost per annum is Rs.28 Lakh per CHC. Cost if calculated

at rates used by Non-profits in Chhattisgarh Rs. 19 Lakh per CHC. If cost calculated for inputs (equipments, reagents, consumables and maintenance) required in government laboratories (assuming HR is anyway paid for) is Rs. 12 Lakh per CHC (calculation is in Annexure 2).

Discussion: The choice between Strengthening Public System and Outsourcing

The following questions emerge from the above findings:

i. **Whether Government provisioning is inherently incapable of providing services**: The evidence on actual outputs of public laboratories shows several gaps in providing some of the necessary tests, it also demonstrated potential to improve substantially with a set of measures. The motivation levels of LTs were found to improve fast, even through a simple measure of a training-workshop. Many government-centers performed well and that they also offer a template for replication. Facilities with better availability of doctors and specialists often showed better performance than those lacking adequate number of clinicians.

   The failure of the first outsourcing attempt in Chhattisgarh highlighted the issue of 'availability'. The private sector showed disinterest in offering services for remote and tribal districts, which form nearly half of Chhattisgarh and have more vulnerable part of population.

ii. **Which is more cost-efficient – direct government provisioning or outsourcing**:

   The cost analysis provided here shows that for the same volume and type of tests, outsourcing at CGHS rates will be costlier than direct-provisioning. Amongst the government labs, majority of them showed adequate volume of tests being handled per LT. Further, the evidence from outsourcing experience in other states has been that the there is provider induced demand, leading to rapid increase in volume of tests and resulting in cost-escalation as seen in Bihar and Andhra Pradesh are ignored [10, 11,12]. It shows that assuming the efficiency of private-labs to be better, just because the payment is based on outputs as opposed to input based financing of government labs, may be erroneous.

iii. **Whether Outsourcing will guarantee automatic output with minimal monitoring needed from government?**

The experience with PPPs in Chhattisgarh for outsourcing in other services like the Mobile Medical Units shows that centralized contracts tend to centralize the monitoring and the district and local health officials get absolved of any responsibility in monitoring services. Chhattisgarh has tried PPPs in clinical services like critical cardiac care and gastroenterology with no success in ensuring delivery of services by private partners, leading to cancellations of contracts after some years. It shows that assuming that the contract will suffice to ensure governance under outsourcing can be erroneous.

iv. **What will it take to strengthen public laboratory services?**

Measures taken in the Lab strengthening project in Chhattisgarh demonstrated that with capacity building interventions, better motivation and outputs could be created.

Two main sets of reasons emerged as contributing to the challenges – one set related to systems necessary for ensuring installation and repair of equipments and availability of reagents and the second set related to how the governance of laboratory services remains under-organized. Both these aspects relate largely to policy design. Tamilnadu and Rajasthan have shown that through such policy design, bulk of the laboratory services can be provided efficiently to serve the needs of the population. Diagnostics emerged as a core function of clinical care which is difficult to outsource.

Conclusion: There is a contestation between ideas of public provisioning versus outsourcing in the domain of essential diagnostics services. The experience in Chhattisgarh shows that strengthening public provisioning can be a viable option and it is also likely to be a more cost-efficient option. It also shows that much more is needed in policy-design to make the public provisioning work upto desired levels. The experience with failed attempts to outsource diagnostics in Chhattisgarh shows that outsourcing cannot be assumed as a trouble-free route to getting the necessary services and needs cautious design in relation to needs of the state.

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