

Draft Policy and Operational Plan for

Free Essential Diagnostics in Public Facilities of Chhattisgarh

Need for Free Essential Diagnostic Policy in Chhattisgarh

Diagnostic services play an important role in identification of disease and thus in its management. Diagnostics are needed for disease surveillance and to tackle existing and emerging diseases. Essential Reproductive and Child health services as well as disease control involve use of diagnostics. Patients perceive availability of diagnostics as an important component of quality of care. Providing access to free or affordable diagnostics can help in reducing the out of pocket expenditure for individuals and families.

Election Manifesto of the new government in Chhattisgarh has also included Free Diagnostics as a key measure to strengthen Universal Health Care through public facilities. Free diagnostics along with free generic drugs have moved to the centre of policy and programme prescriptions in India. Government of India has again highlighted these as top priorities. While, Chhattisgarh brought in free generic drug policy in 2013, it needs to move towards a Free Essential Diagnostics policy soon.

Policy objective

To provide the essential diagnostics services, free of cost, at appropriate level of care for patients coming to government health facilities.

Why Free?

Under the Janani Shishu Suraksha Karyakram (JSSK), all diagnostics for pregnant women and newborn are already meant to be free of cost for the user. Some of these entitlements in Chhattisgarh have been extended to all infants. Many other tests under national disease control programmes are also free e.g. sputum test for TB and rapid diagnostic test (RDT) for malaria. In-patients under RSBY/MSBY are also to be provided free diagnostics. User fees have been proven to be a barrier for ensuring equitable access to services. Since, all tests proposed to be covered here are in the 'essential' category, it is proposed to provide all essential tests free of cost.

Currently, many Government facilities especially District hospitals and CHCs earn significant amounts of revenue through User Fees imposed on diagnostics by Jeevan Deep Samitis (JDS). They will have to be compensated for this loss, once the User Fees are prohibited. There are adequate funds available under NHM and State-budget to provide such financial support to government health facilities.

What it will take to realize a Free Essential Diagnostics Policy

The following steps are suggested along with the underlying analysis for realizing a Free Diagnostics Policy in Chhattisgarh:

1. Notifying the list of 'Essential' diagnostics

Lists of tests to be considered as 'Essential' at four different levels - sub-centre, PHC, CHC and District Hospital level, needs to be notified as tests which are to be provided free of cost to any patient at these facilities across the state. A proposed list of tests finalized at national level is provided in **Annexure A**.

2. Stopping User Fees

Facility wise listed diagnostic tests in Annexure A will be provided free of cost to the patients in all the public health institutions of the State. User fees will be prohibited. The facilities will be compensated for the loss of revenue by providing funds from state-level.

Government of Chhattisgarh recognizes the need for ensuring availability of essential diagnostic services at appropriate levels of care in its public health facilities.

In his 2018-19 budget speech CM has announced "*Free Diagnostic Scheme*" in the state and State has also approved budget of **30 crore** for the scheme.

2a. Financial Implications – Budget Required

In PIP RoP 2018-19, Rs.5 Crore is available for Free Diagnostics. This will suffice for first 3 to 6 months.

In addition Rs. 10 Crore is available from Carry-forward from previous PIPs. For Health and Wellness Centres, Rs 50000 per year for 650 SCs (Total 3.25 Crore) has been sanctioned additionally.

The total annual fund needed for Free Diagnostics will be around Rs.24 Crores, when the scheme gets fully implemented

Free Diagnostics – Annual Fund Required Estimation			
Equipment	Required Number to equip all DH+CHCs	Cost per unit (₹) (included AMC)	Total cost (₹)
CBC Machine	155	292371.8	4.53
Semi Auto analyzer	107	88447	0.95
Electrophoresis Machine	100	30000	0.30
Centrifuge	22	83105	0.18
Electrolyte analyzer	155	139740	2.17
Other equipments			1.50
Sub-Total (A)			9.63
Consumables	No of Health facilities	Annual Required Cost in (₹)	Annual Total cost (Crores)
Consumable cost for 1 PHC	750	70000	5.25
Consumable cost for 1 CHC	160	300000	4.8
Consumable cost for 1 DH	26	1800000	4.68
Sub-Total (B)			14.73
Total (A)+(B)			24.36
State Budget Head			9.75
NHM Budget Head			14.61

Currently, most of the consumables and reagents for diagnostics are purchased by JDS of respective hospitals. To withdraw the User Fees, it will be necessary to compensate the hospitals adequately by providing funds from DHS/NHM.

This plan proposes that initially, 50% of the consumable funds should be given to Districts. Gradually this amount can be reduced as CGMSC starts procuring the high-volume items.

For first six months, around Rs. 3.7 Crore will need to be given to districts.

Draft Proposed Budget to districts for six months under free diagnostics						
Name of District	Name of Health Facility	Number of Health facility PHC	Budget/PHC	Budget/CHC	Budget/DH	Total
Surajpur	CHC (6)	36	630000	450000	450000	1530000
Kawardha	CHC (6)	24	420000	450000	450000	1320000
Bilaspur	CHC (8)	55	962500	600000	450000	2012500

Balod	CHC (6)	30	525000	450000	450000	1425000
Baloda Bazaar	CHC (6)	31	542500	450000	450000	1442500
Koria	CHC (5)	28	490000	375000	450000	1315000
Balrampur	CHC (5)	27	472500	375000	450000	1297500
Raipur	CHC (7)	30	525000	525000	450000	1500000
Sarguja (Ambikapur)	CHC (7)	25	437500	525000	450000	1412500
Narayanpur	CHC-Orchha	8	140000	75000	450000	665000
Bijapur	CHC (5)	10	175000	375000	450000	1000000
Jashpur	CHC (8)	34	595000	600000	450000	1645000
Dantewada	CHC (4)	12	210000	300000	450000	960000
Dhamtari	CHC (4)	24	420000	300000	450000	1170000
Kondagaon	CHC (5)	19	332500	375000	450000	1157500
Rajnandgaon	CHC (10)	48	840000	750000	450000	2040000
Mungeli	CHC (3)	27	472500	225000	450000	1147500
Bastar	CHC (6)	41	717500	450000	450000	1617500
Bemetara	CHC (3)	24	420000	225000	450000	1095000
Durg	CHC (8)	30	525000	600000	450000	1575000
Gariaband	CHC (5)	17	297500	375000	450000	1122500
Janjgeer Champa	CHC (10)	45	787500	750000	450000	1987500
Kanker	CHC (7)	33	577500	525000	450000	1552500
Korba	CHC (5)	38	665000	375000	450000	1490000
Mahasamund	CHC (5)	30	525000	375000	450000	1350000
Raigarh	CHC (9)	53	927500	675000	450000	2052500
Sukma	CHC (2)	13	227500	150000	450000	827500
Total	156	792	13860000	11700000	12150000	37710000

Implementation Steps:

3. In-house Provisioning of Low Cost-High Volume Tests

All tests other than those mentioned above in Table1, will be provided in-house by strengthening the government facilities through the following strategies:

3a Ensuring essential Equipments

List of required equipments, reagents and consumables is enclosed as **Annexure B**. Amongst the equipments needed, the following is the status of availability as updated in 2017:

Availability of equipments in DH					
Particular	CBC Machine	Semi Auto analyzer	Electrophoresis Machine	Centrifuge machine	Electrolyte analyzer
Available	20	24	14	24	12
Not working	1	1	4	1	1
Not available	5	1	8	1	13
Total	26	26	26	26	26

Availability of equipments in CHC					
Particular	CBC Machine	Semi Auto analyzer	Electrophoresis Machine	Centrifuge machine	Electrolyte analyzer
Available	8	53	32	139	13
Not working	1	0	9	1	4
Not available	141	97	109	10	133

In first phase, the following equipments can be provided to the DHs and CHCs:

Equipment	Required Number	Cost per unit (₹) (included AMC, Rs.)	Total cost in Rs. Crores
CBC Machine	155	292371.8	4.53
Semi Auto analyzer	107	88447	0.95
Electrophoresis Machine	100	30000	0.30
Centrifuge	22	83105	0.18
Electrolyte analyzer	155	139740	2.17
Radiology equipments (USG, X-Ray)	50	1300000	6.50
Total			14.63

Repairs of Equipment: This was one of the critical weaknesses, affecting the availability of tests. The state has already hired an agency to improve repairs and calibration of equipments. Initial AMC can be built in the purchase agreement. Biomedical Engineers recruited by NHM can be trained to coordinate repairs and ensure that the machines remain functional.

3b Ensuring essential reagents and consumables:

Ensuring availability of reagents can be the single most effective strategy in ensuring tests. The strategy can be to devise an indent of items and quantities to be procured and supplied by

CGMSC. 50% of the funds will be allocated to CGMCS for central purchasing and supply of reagents and consumables to the districts. And 50% of funds will be given to districts for meeting critical shortage of reagents and consumables. For the purpose, it is suggested that initial allocation to CGMSC can be around Rs. 7.3 Crore to bulk-purchase commonly needed high-volume supplies. The districts can be given funds as per following average costs for different levels of facilities.

Consumables	No of Health facilities	Annual Required Cost in Rs.	Annual Total cost in Rs. Crores
Consumable cost for 1 PHC	750	35000	2.62
Consumable cost for 1 CHC	160	150000	2.40
Consumable cost for 1 DH	26	900000	2.34
Total			7.36

The above resources given to districts will also imply that facilities have been compensated for stopping User Fees. The actual allocation per facility can be a part of above (say, one quarter) to start with and the remaining being given based on case-load handled and tests actually conducted by particular facility.

3c Human resource for laboratory services:

The recommendation for this policy is to ensure HR as per following norms:

- DH: 6 Laboratory Technicians, 2 radiographer and 1 ECG technician per District Hospital
- FRU CHC: 4 Laboratory Technicians per FRU, 1 radiographer and 1 ECG technician per FRU
- Non-FRU CHC: 3 Laboratory Technician/ Assistants per CHC (to ensure round the clock availability in case a bleeding or unconscious patient arrives), 1 radiographer per CHC
- PHC: 1 Laboratory Assistant/ Technician per PHC

Thus around 1300 laboratory technicians are needed to equip all the government facilities. The already sanctioned posts roughly tally with this need. Current situation of Laboratory HR in the state is-

	Sanctioned posts of LTs	Filled posts	Vacant posts
Directorate Health Services (regular posts)	1146	868 (76%)	278 (24%)

NHM Contractual (RNTCP, NVBDCP, NPCDCS, NPPCF)	277	252 (91%)	25 (9%)
NUHM (Contractual posts)	36	28 (78%)	8 (22%)
Total	1459	1148 (79%)	311 (21%)

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

Thus, the state has in place 79% of the required laboratory workforce in its government facilities. More than two-third of the PHCs have one laboratory-technician/ assistant. Some CHCs have two laboratory-staff and the rest have at-least one laboratory-staff. Most district hospitals have more than two laboratory-staff. An assessment done by SHRC had shown that tribal areas also have similar proportion of posts filled with Bastar division having higher rate of filling posts as compared to Surguja division. A re-appropriation of existing HR according to the above recommended norms and filling of vacant positions is needed.

One Microbiologist post should be included in all district hospitals. Vacancies of Pathologists should be increased.

3d Integration of laboratory technicians posted under vertical programs

A large number of laboratory technicians/staff are also posted at CHCs and DH under vertical programmes like Blood Bank, RNTCP, Malaria, Chirayu (RBSK) and HIV programmes. These technical staff can also be utilized in hospitals for routine testing. The state health department has already made efforts to remove the barrier of vertical programming as far as laboratory-technician's role is concerned. This step is likely to improve the overall size of available laboratory Human Resource to meet the needs of free diagnostics policy.

3e Skill Improvement of laboratory staff and Clinicians

Most of the laboratory staff working at health facilities have done one year certificate course on clinical pathology. They need more input in skills covering all aspects of clinical laboratory viz. Pathology, Biochemistry and Microbiology. State has initiated skill enhancement of staff. Under this, 237 laboratory technicians/ assistants, mainly from CHCs and DHs have been trained on basic laboratory services in AIIMS, Raipur.

The policy recommendation is to ensure annual refresher training for 3-5 days to all laboratory staff. The numbers can be covered gradually by involving Medical Colleges and later involving district hospitals by creating Master Trainers. ANM working at SHC level should also be trained on using kit based diagnostic tests. An innovation can be to allow the best performing laboratory-technicians to come forward as mentors to provide occasional on-the-job guidance to other laboratory staff in their district.

An orientation on rational diagnostics is recommended for MOs/Specialists so that appropriate prescription practices for diagnostics can be promoted.

3f Laboratory monitoring & reporting and quality assurance including EQAS

At the Directorate level, a separate State Nodal Officer needs to be designated for Free Essential Diagnostics. Similarly, a Programme Officer needs to be designated at district level to take care of laboratories across the facilities in district.

Preferably one medical officer should be officially in-charge of laboratory services in the CHC. At state level, at least one consultant is needed to assist the State Programme Officer.

The role of the laboratory Programme Officers will be to follow-up for required recruitments, training and supplies. Another key role is to review progress in achieving desired number of tests in various facilities in relation to their patent-load.

Quality management needs to be strengthened through measures like standard operating procedures, training, inspection visits, patient-satisfaction surveys, audits for rational prescription of drugs and review meetings. Gradually, accreditation of laboratories can be attempted through NABL. For External Quality Assurance (EQAS), AIIMS, Raipur or Medical colleges can be involved.

4. Recognize DMLT (two-year) diploma course on Medical Laboratory Technology

The Para Medical Council needs to recognize Diploma in Medical Laboratory Technology course (DMLT) so that they can get registration in the state. It will be useful to start BMLT and higher courses in medical institutions in Chhattisgarh and the current staff be allowed to upgrade their skills through bridge courses.

5. Strategy for 'High Cost - Low Volume' tests

Some diagnostic tests which are part of essential diagnostic list are to be provided in district hospitals. These tests are high in cost but low in volume and need more specific skills and requirements. These tests can be provided by choosing from the two options; a) outsourcing of some tests at district hospital level b) Gradually increase capacity through regional labs

List of Diagnostics recommended to be Outsourced – Table 1	
Test	Level

1	CT-Scan	District Hospital
2	TSH	District Hospital
3	T3	District Hospital
4	T4	District Hospital
5	Blood Culture	District Hospital
6	Urine Culture	District Hospital
7	Histopathology- Biopsy and / Bone marrow aspiration Exfoliative cytology / cytopathology)	District Hospital
8	S. CRP	District Hospital

Rest of the designated tests given in Annexure A in District Hospitals, will be provided in-house by government lab.

All designated tests in CHCs, PHCs and Sub-centres will be provided in-house by government labs/staff.

6. Learning from Well performing states and our own experience

A situational analysis of tribal districts is given, including experience of training 237 lab-technicians in collaboration with AIIMS (**Annexure C**).

The state has a lot of learn from Rajasthan model, which has implemented Free Essential Diagnostics well. A summary of Rajasthan model is enclosed (**Annexure D**)

Annexure A

Proposed Essential Diagnostics at four levels of care

1) LIST OF FREE INVESTIGATIONS (FOR SUB HEALTH CENTRES)

S.N.	Name of Test	Reporting Time Frame
Clinical Pathology		
1	Hemoglobin Estimation (Hb)	Within 30 minutes
2	Malaria (Rapid test)	
3	Blood Sugar(Glucometer)	
4	Rapid Diagnostic test for Pregnancy(Urine Pregnancy Test)	
5	Solubility Test (Sickle cell Screening)	
6	Urine Albumin/Urine Sugar /Leucocyte Esterase	
7	Visual Inspection Acetic Acid (VIA)	

2) LIST OF FREE INVESTIGATIONS (FOR PRIMARY HEALTH CENTRES)

S.N.	Name of Test	Suggestive Time Frame
Clinical Pathology		
1.	Hemoglobin Estimation (Hb)	Up to 2 hours
2.	Total Leukocyte Count (TLC)	Up to 2 hours
3.	Differential Leukocyte Count (DLC)	Up to 2 hours
4.	Platelet count	Up to 2 hours
5.	MP (Slide Method)/(Rapid test)	Up to 2 hours
6.	ESR	Up to 2 hours
7.	Blood Group (ABO-RH typing), Clotting Time (CT)	Up to 30 minutes
8.	Solubility Test (Sickle cell Screening)	Up to 30 minutes
Bio Chemistry		
9.	Blood sugar	Within 15 minutes (if critical) Up to 2 hours in routine
10.	S. Bilirubin	Up to 2 hours
Sero-Microbiology		
11.	Rapid Plasma Reagin (RPR) Kit Test	Within 30 min
12.	HIV Test	Within 30 min using RDK in emergency and Up to 2 days in routine/ ELISA
13.	Sputum for AFB	Up to 2 days
14.	WIDAL Test	Up to 2 hours
Urine Analysis		
15.	Urine Sugar / Albumin/Leucoyte Esterase	Within 30 min
16.	Urine Pregnancy test (UPT)	Within 30 min
17.	Urine Microscopy	Within 30 min
Stool Analysis		
18.	Stool for (OVA and cyst, Vibrio cholera)	Up to 1 day
19.	Water Quality Testing-H ₂ S Strip test for Faecal Contamination	Once a week

3) LIST OF FREE INVESTIGATIONS (FOR COMMUNITY HEALTH CENTRES)

S.N.	Name of Test	Suggestive Time Frame
Clinical Pathology		
1.	Hemoglobin Estimation (Hb)	Up to 4 hours
2.	Total Leukocyte Count (TLC)	Up to 4 hours
3.	Differential Leukocyte Count (DLC)	Up to 4 hours
4.	Platelet count by Cell Counter	Up to 2 hours
5.	Total Red Blood Cell Count	Up to 8 hours
6.	Packed cell volume (PCV)	Up to 8 hours
7.	CBC	Up to 4 hours
8.	PT INR	Up to 4 hours
9.	MP (Slide Method)/(Rapid test)	Up to 4 hours
10.	ESR	Up to 4 hours
11.	Blood Group (ABO-RH typing), Clotting Time (CT)	Up to 4 minutes
12.	Solubility Test and Electrophoresis (Sickle cell Screening)	Up to 4 minutes
Bio Chemistry		
13.	Blood sugar	Within 15 minutes (if critical) Up to 4 hours in routine
14.	Blood Urea	Up to 8 hours
15.	S. Creatinine	Up to 8 hours
16.	S. Bilirubin (T)	Up to 4 hours
17.	S. Bilirubin (D)	Up to 4 hours
18.	SGOT	Up to 8 hours
19.	SGPT	Up to 8 hours
20.	S. Alkaline Phosphates	Up to 8 hours
21.	S. Total Protein	Up to 8 hours
22.	S. Albumin	Up to 8 hours
23.	S. Total Cholesterol	Up to 1 day
24.	S. Triglyceride	Up to 1 day
25.	S. VLDL	Up to 1 day
26.	S. HDL	Up to 1 day
27.	S. Amylase	Up to 8 hours
Sero-Microbiology		
28.	Rapid Plasma Reagin (RPR) Kit Test	Within 30 min
29.	HIV Rapid Test	Within 30 min using RDK in emergency and Up to 1 days in routine/ ELISA
30.	Sputum for AFB	Up to 1 days
31.	WIDAL Test	Up to 4 hours
32.	Dengue (Rapid test)	Within 30 min
Urine Analysis		
33.	Urine Pregnancy test (UPT)	Within 4 hours

34.	Urine Microscopy	Within 4 hours
35.	Urine Complete by strip method (Bile Salts, Bile Pigment, Ketone bodies & Occult blood, sugar, albumin, Ph, specific gravity) and Leucocyte Esterase	Within 4 hours
	Stool Analysis	
36.	Stool for (OVA and cyst, Vibrio cholera)	Up to 1 day
	Radiology	
37.	X-Ray (With/Without Contrast)	Up to 4 hours
38.	USG	Up to 4 hours
	Cardiology	
39.	ECG	Within 15 mins. In emergency

D) LIST OF FREE INVESTIGATIONS (FOR DISTRICT HOSPITAL)

S.N.	Name of Test	Suggestive Time Frame
Clinical Pathology		
1.	Hemoglobin Estimation (Hb)	Up to 4 hours
2.	Total Leukocyte Count (TLC)	Up to 4 hours
3.	Differential Leukocyte Count (DLC)	Up to 4 hours
4.	Platelet count by Cell Counter	Up to 2 hours
5.	Total Red Blood Cell Count	Up to 8 hours
6.	Total Eosinophilic Count (TEC)	Up to 8 hours
7.	Peripheral Blood Smear	Up to 8 hours
8.	Packed cell volume (PCV)	Up to 8 hours
9.	CBC	Up to 4 hours
10.	Coomb's test-Direct	Up to 4 hours
11.	Coomb's test-Indirect	Up to 4 hours
12.	PT INR	Up to 4 hours
13.	MP (Slide Method)/(Rapid test)	Up to 4 hours
14.	ESR	Up to 4 hours
15.	Blood Group (ABO-RH typing), Clotting Time (CT)	Up to 4 minutes
16.	Solubility Test and Electrophoresis (Sickle cell Screening)	Up to 4 minutes
17.	Cell Count and Bio-chemistry (CSF, Pleural and Ascitic fluid)	Up to 8 hours
18.	Semen Analysis sperm count (Manual)	Up to 1 days
Bio Chemistry		
19.	Blood sugar (HbA1C)	Within 15 minutes (if critical) Up to 4 hours in routine (HbA1C)
20.	Blood Urea	Up to 8 hours
21.	S. Creatinine	Up to 8 hours
22.	S. Bilirubin (T)	Up to 4 hours
23.	S. Bilirubin (D)	Up to 4 hours
24.	SGOT	Up to 8 hours
25.	SGPT	Up to 8 hours
26.	S. Alkaline Phosphates	Up to 8 hours
27.	S. Total Protein	Up to 8 hours
28.	S. Albumin	Up to 8 hours
29.	S. Calcium/Potassium/Sodium	Up to 8 hours
30.	Troponin I/Troponin T	Within 2 hours
31.	S. Uric Acid	Up to 1 day
32.	S. Total Cholesterol	Up to 1 day
33.	S. Triglyceride	Up to 1 day
34.	S. VLDL	Up to 1 day
35.	S. HDL	Up to 1 day
36.	S. LDH	Up to 8 hours
37.	S. Amylase	Up to 8 hours

38.	Vitamin B12	Up to 8 hours
Sero-Microbiology		
39.	Rapid Plasma Reagin (RPR) Kit Test	Within 30 min
40.	HIV Rapid Test	Within 30 min using RDK in emergency and Up to 1 days in routine/ ELISA
41.	Sputum for AFB	Up to 1 days
42.	WIDAL Test	Up to 4 hours
43.	Dengue (Rapid test)	Within 30 min
44.	Rheumatoid Factor (RA)	Up to 2 days
45.	Anti Streptolysin – O (ASLO)	Up to 8 hours
46.	HBsAg (Rapid) test	Within 30 min
Urine Analysis		
47.	Urine Pregnancy test (UPT)	Within 4 hours
48.	Urine Microscopy	Within 4 hours
49.	Urine Complete by strip method (Bile Salts, Bile Pigment, Ketone bodies & Occult blood, sugar, albumin, Ph, specific gravity) and Leucocyte Esterase	Within 4 hours
Stool Analysis		
50.	Stool for (OVA and cyst, Vibrio cholera)	Up to 1 day
Radiology		
51.	X-Ray (With/Without Contrast)	Up to 4 hours
52.	USG	Up to 4 hours
Cardiology		
53.	ECG	Within 15 mins. In emergency

Annexure-B - List of essential equipments, reagents and consumables

B1. Equipments

Srl No.	List of equipments	Level of facility
1	Microscope	PHC/CHC/DH
2	Haemometer	PHC/CHC/DH
3	Number counting chamber	PHC/CHC/DH
4	Centrifuge machine	PHC/CHC/DH
5	ESR Stand and tube	PHC/CHC/DH
6	Calorimeter	CHC/DH
7	Hot air oven	CHC/DH
8	Semi auto analyser/auto analyser	CHC/DH
9	CBC Machine	CHC/DH
10	Electrophoresis machine	CHC/DH
11	Electrolyte analyser	CHC/DH
12	VDRL shaker	CHC/DH
13	Incubator	CHC/DH
14	Coagulation analyser	DH
15	Urolyser	CHC/DH
16	X-ray for chest, skull, spine, abdomen, bones	CHC/DH
17	Dental X-ray	CHC/DH
18	ECG machine	CHC/DH
19	Ultra sonography	DH CHC (Desirable)
20	X-ray films	CHC/DH

B2. List of essential reagents and consumables for Pathology

S. NO.	Material	UOM
1	10% BARIUM CHLORIDE	ML
2	N/10 HCL	ML
3	AEC DILUTING FLUID	ML
4	ANTI SERA "ABD"	SET
5	APPT REAGENT	μl
6	BENEDICTS REAGENT	ML
7	BILIRUBIN POWDER	GM
8	CALCIUM CHLORIDE	VIAL
9	COOMBS REAGENT	VIAL
10	COTTON	ROLL
11	COVER SLIP FOR CHAMBER	PACK
12	COVERSLIP 10GMS (22X22MM)	BOX
13	COVERSLIP 10GMS (22X40MM)	BOX
14	DEXTROSE 25%	BOTTLE
15	DEXTROSE POWDER	GM
16	DISPOSABLE SYRINGE 5 ML	BOX
17	DISTILLED WATER	CAN
18	DROPPER 3ML (PLASTIC)	NOS
19	EXAMINATION GLOVES (NON STERILE)MEDIUM SIZE	BOX
20	EXTRAN 5 LTRS	CAN
21	FOUCHET'S REAGENT	BOTTLE
22	GIEMSAS STAIN (MICROCROME)	ML
23	GLASS PASTURE PIPETTE	NOS
24	IMERSION OIL	ML
25	LEISHMAN'S STAIN	ML
26	METHENOL	BOTTLE
27	MICRO TIP (100-1000μl)	NOS
28	MICRO TIP (5-50μl)	NOS
29	NORMAL SALINE	BOTTLE
30	OCCULT BLOOD	KIT
31	PAP STAIN KIT ULTRA PAP KIT	KIT
32	PAPER NAPKIN	PACK
33	PLAIN GLASS SLIDE	NOS
34	PLASTIC FUNNLE	NOS
35	PLT DILUTING FLUID	BOTTLE
36	PT REAGENT	VIAL

37	RETICVIEW STAINING KIT	BOTTLE
38	SICKLEVUE SICKLING TEST KIT	SET
39	SODIUM HYPOCHLORITE SOLUTION	CAN
40	SODIUM NITROPRUSSIDE	PACK
41	SPATULA(SS)	NOS
42	SPIRIT FOR LAMP (SOLVENT)	BOTTLE
43	SPIRIT LAMP (SS)	NOS
44	SPIRIT/DISINFECTANT	BOTTLE
45	STERILIZING SOLUTION	BOTTLE
46	SULPHUR POWDER (FEW)	GM
47	TEST TUBE 12X75MM	BOX
48	TEST TUBE 15X125MM	BOX
49	TEST TUBE 18X150MM	BOX
50	TEST TUBE CLEANING BRUSH	NOS
51	TORNIQUET	NOS
52	VACUTAINERS (CITRATED)BLUE TOP	NOS
53	VACUTAINERS (EDTA)PURPLE TOP	NOS
54	WBC DILUTING FLUID	ML
55	WHATMAN PAPER(WHITE)	NOS
56	GLASS SPREADER	NOS
57	PLAIN FORCEPS 6"	NOS
58	BAND AID	NOS

List of Reagents and consumables for Microbiology

Disposable Dropper
Gloves
Universal container
Plain Glass Slide
Blotting sheet
Cover Slip (18mm)
Paraffin wax
Lugol's Iodine
Normal saline
Zn Acid fast stain kit
Albert's Stain A
Albert's Stain B
10% Potassium Hydroxide (KOH)
Sodium Hypochlorite
Bleaching powder
Widal kit

Hepa Card
HCV rapid
ASO kit
Leptospira kit
Dengue kit
RPR /VDRL Kit

List of essential reagents and consumables for Biochemistry

Name of reagents	Kits
Glucose Tolerance Test	Blood Sugar Estimation
RFT	Urea
	Creatinine
	Uric Acid
LFT	SGPT
	SGOT
	Alkaline Phosphatase
	Albumin
Lipid	Triglycerides
	HDL Cholesterol
	Total Cholesterol
	Glycosylated Hemoglobin
	Serum Bilirubin (T & D)
	Serum Na, K
	Calcium (Monovial)
	Magnesium
	Phosphorus
CSF	Protein
	Glucose
	Creatinine Phospho Kinase MB
	Creatinine Phospho Kinase NAC

Thyroid (ELISA Kit)	T3
	T4
	TSH

Pipettes

Fixed volume micropipette Borosil	1ul
	10 ul
	500 ul
	1000 ul
Tips for Micropipette	2 - 20 ul
	100 - 1000 ul

Annexure C

Situational analysis - Chhattisgarh

As stated earlier, the state has around three-fourth of the required Human Resource and is likely that most of the required equipment is also available. However due to the gaps described above, the performance of laboratories in delivering the desired number of tests gets reduced to some extent.

The situational analysis suggests that the government facilities up to District Hospital level in the state are delivering close to half of the desired quantity of testing. The analysis done for data in Surguja and Kondagaon illustrates this. It was seen that after training the laboratory staff in these two districts, the laboratories there were able to cross the 50% mark of required numbers for important tests. The table below provides the information on analysis done:

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

Comparatively, well-performing states like Rajasthan provide around 50% more tests.

Summary report- On availability of diagnostic facilities in public hospitals of Surguja & Bastar division (Conducted by SHRC-2013)

Human resources status is better in Bastar division than in Surguja division. However sometimes Laboratory staff from some lower health facilities are attached to higher facility due to the high burden of cases there.

Supplies of necessary reagents are not always adequate. Sometimes unnecessary reagents which are not useful in the health centers are delivered that ultimately leads to

wastage (expiry dated reagents). It is seen that in emergency situation reagents are purchased through Jeevan Deep Samiti fund but it is not sufficient. In District Hospital, some expensive equipment was available but tests could not be done because of lack of training of the concerned staff. In some health centers, equipment was not properly maintained.

Key Recommendations from the study

- Fill posts of laboratory technicians and radiographers
- Recruit/train local youth from marginalized communities and train using Manuals e.g. Where There Is No laboratory Technician
- Skill Training for existing laboratory staff in all necessary tests
- Improve Supplies

Laboratory staff trained in 6 day course at AIIMS Raipur under SHRC-EUSPP collaboration 2015 to 2017

Batch	Name of district	No of staff trained	PHC	CHC/DH
1	Surguja, Kondagaon	17	17	-
2	Surguja, Kondagaon	22	21	1
3	Surguja, Kondagaon	19	-	19
4	Sukma, Bijapur, Narayanpur, Dantewada, Jagdalpur, Balrampur, Soorajpur, Jashpur	57	-	57
5	Raipur, Durg, Rajnandgaon, Dhamtari, Balaudabazar, Gariyaband, Mungeli	60	-	60
6	Bilapur, korba, raigarh, Mahasamund, Kanker, Janjgir, Koriya, Bemetra, Balod, Kawardha	62	-	62
	Total trained	237	38	199

Post-training Performance of laboratories in Surguja and Kondagaon

Important Tests	Approximate desired no. of Tests per 100 Patient-load	Estimate of Current Achievement in Government facilities up to DH level
Hemoglobin	25	18
Malaria	40	34
Blood group/Rh type	12	7
Urine- Albumin, sugar	10	7
WIDAL	12	6

Pregnancy	4	2
Blood Sugar	10	5
TB	5	2
HIV	4	3
TLC/DLC	15	2
ESR	5	2
Sickle cell test	10	2
VDRL	4	2
RFT	3	1
LFT	3	1
RA Factor	2	1
ASO Factor	2	1
Total	166	96

The above analysis showed that with some doable interventions, the government facilities can reach close to the desired mark in providing 'essential' diagnostics. Given this scenario, outsourcing of basic laboratory services is less desirable. The outsourcing option is not required for basic tests as the government labs can gain the capacity to fulfill this role. Secondly, the experience of outsourcing to private laboratories in other states (e.g. Bihar) have shown severe limitations of the model and dangers of irrational prescription of tests and cost escalation. Another practical issue would be – what to do with existing laboratory staff if the testing is outsourced. Finally, in terms of financial implications, strengthening existing laboratories in government facilities is likely to cost less than outsourcing cost.

Annexure D

Rajasthan Free Diagnostic Model

MUKHYAMANTRI NISHULK JAANCH YOJNA

Scheme for Free Basic Diagnostic Services in Government Facilities

Main Features of Rajasthan Model:

1. Tests of pathology, biochemistry and microbiology tests are provided free of cost. In Radiology – X-Ray and Ultra-sound are provided free of cost. All these tests are provided in-house directly by labs in government hospitals, without any involvement of private sector. Rajasthan Medical Services Corporation procures equipment, coordinates their maintenance and also procures most of the necessary reagents and consumables. 20% of budget for reagents and consumables is given to districts for meeting critical shortages.
2. High-end Radiology services - of CT Scan, MRI, EEG and ECHO Cardiography are provided through Outsourcing by Private providers. These services are not given free. Patients pay part of the cost as User Charges.

Details are given in following pages.

<u>BASIC TESTS (FREE)</u> <u>Provided by Government Labs directly</u> Required for diagnosis of common illnesses by >90% of patients at Primary & Secondary care hospitals.	<u>SPECIALISED TESTS (PAID)</u> Provided by Government Labs and in some cases using Private partners Required for <10% of patients at Tertiary care hospitals
Pathology – Blood for HB, TLC, DLC, TEC, T-RBC, ESR, PBF, Malaria AG, Platelet Count, BT, CT, PCV, CBC, Urine Complete, stool examination CSF, Pleural fluid etc .	
Bio-Chemistry –B Sugar, Creatinine, Urea, Uric Acid, S-phosphorus, Calcium, Total Protein, Bilirubine, SGOT, SGPT, S alk-phosphatase, LDHCPK,CPKMB, GGT, Amylase, Lipase, Total lipid Profile, S. Electrolyte.	
Microbiology – Widal test, VDRL, ASLO Titre, CRP, RF, Pregnancy Test, HBS – AG, etc.	
Radiology - X-Ray, ECG, Ultra-sound	CT Scan, MRI, EEG, ECHO Cardiography

➤ **PACKAGE OF FREE TESTS AT VARIOUS LEVEL OF HEALTH CARE**

S.No.	Level of care	Medical Institutions	No. of free test
1	Primary	PHC	15
2	Secondary	CHC	28
3	Tertiary	DH/SDH/SH	44

4	Tertiary	Medical College	57
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BASIC COMPONENTS FOR STRENGTHENING AND MODERNIZATION OF LABORATORIES

1. Infrastructure – (through NHM funds of hospital maintenance)

- Need based additional civil work/space at CHC/DH
- Construction of shelves & cabinets to store reagents
- Platform, Basin ,sink and other sanitary fittings

2. Manpower

- Rational/need based posting of available Lab. Technicians
- Training of Lab. Technicians
- Contractual Recruitment of additional Lab. Technicians and one data entry operator for lab work reporting
- One Nodal officer in-charge for lab services in CHC and DH

3. Equipment & instruments

- RMSC is responsible for annual R/C for equipments and other regularly required materials
- EMRC (Equipment Maintenance Repair Cell) of RMSC is responsible for Installation, repair and (AMC) maintenance of equipments.

4. Supply of essential reagents and consumables

- Reagents and consumables are centrally purchased by procurement cell of RMSC.
- 20% of fund is given to districts to meet critical shortage.
- List of essential reagents and consumables are prepared
- Prepared guidelines & framework for collecting Annual Demand of essential reagents and consumables, to validate annual demand & providing the consolidated demand to facilitate Procurement Section for rate contracts.
- Once the reagents are purchased, ensure distribution to all the warehouses and supply to districts and CHC.
- Procurement orders are proposed to be placed to meet out 4 months need and 2 months pipeline stock likely to be in transit and under quarantine. Though the procurement will be centralized but the suppliers will be required to supply the items directly to the District Warehouses (DW).
- Logistic cell do continue monitoring of stock at facility as well as warehouse and ensure timely supply.
- Once the stock is reached to 2 months of threshold computerized indent generated and submitted and supply is ensured.

