सत्यमेव जयते

Report of the
Comptroller and Auditor General of India

Performance Audit of Select District Hospitals in Mizoram

for the year ended 31 March 2019

लोकहितार्थ सत्यनिष्ठा

Dedicated to Truth in Public Interest

GOVERNMENT OF MIZORAM

Report No. 1 of 2021

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PREFACE

This Stand Alone Report of the Comptroller and Auditor General of India containing the results of Performance Audit of Select District Hospitals in Mizoram for the period 2014-19 has been prepared for submission to the Governor of Mizoram under Article 151 of the Constitution of India.

District Hospitals are set up for providing a plethora of services for preventive, diagnostic and curative health care to the people in the district, at an acceptable level of quality, and be responsive and sensitive to the needs of the people. The focus of the Audit is to assess the role of the district hospitals in providing the envisaged health care services to the people in an affordable and timely manner and of the expected quality standards and norms.

Audit has been conducted in conformity with the Auditing Standards issued by the Comptroller and Auditor General of India.

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

About the Report:

The Report is about the Results of a Performance Audit of Select Public Health facilities of secondary care (District-level Hospitals) and primary care [one Community Health Centre (CHC) and one Primary Health Centre (PHC)], in the State of Mizoram. We covered the period from 2014-15 to 2018-19. The audit examination included records maintained in Directorate of Health and Family Welfare, offices of the Director, Hospital and Medical Education, Mission Director of National Health Mission (NHM) and District Medical Superintendents, Medical Superintendents of selected District Hospitals (DHs), *i.e.* Aizawl, Champhai and Lawngtlai and Senior Medical Officer/ Medical Officer of selected CHC and PHC.

What has been covered in this audit?

In this Performance Audit we have focussed on patient care given by the primary and secondary care levels in the State. We assessed the availability of basic infrastructure facilities in the State, adequacy of manpower in the selected DHs and various Services provided therein like Out-Patient and In-Patient Services, Maternity Services, Emergency Services, Drug Management, Infection Control, Bio Medical Waste Management, Diagnostic Services, Fire control measures, *etc.* based on pre-determined performance indicators/ criteria in the sampled district level and block level hospitals (CHC and PHC). We have adopted the Indian Public Health Standards (IPHS) guidelines as prescribed by Government of India which are a set of uniform standards envisaged to improve the quality of health care delivery in the country for benchmarking various audit findings.

What have we found?

We found significant areas for improvement in the healthcare needs of the people as highlighted below:

Financial Resources

Funds under State Budget

The budget allotment and expenditure of the Health and Family Welfare Department against the State Budget during the period 2014-19 was 5.93 *per cent* and 5.38 *per cent* respectively as against an envisaged allocation of at least eight *per cent* of the total budget for health as per the National Health Policy, 2017. The total expenditure on Health was ₹ 2,230.31 crore during the period and it had increased from ₹ 331.53 crore in 2014-15 to ₹ 576.85 crore in 2018-19. The Department failed to fully utilise the allotted funds during 2014-19 with unspent funds ranging from 24 (₹ 177.49 crore) to 32 *per cent* (₹ 178.47 crore). The capital expenditure on creation/ strengthening of infrastructure facilities constituted 9.2 *per cent* of the total expenditure during the period. We therefore recommend that the Department could further improve its spending on health care.

(Paragraph 2.1.1)

Recommendation

- *The State Government may enhance the budget provision and expenditure on healthcare services to ensure that adequate and quality healthcare infrastructure and services are provided to the people of the State.*

Essential Resources Management

Shortage of doctors and nurses

There was shortage of one specialist doctor each in Orthopaedics and Radiology in Lawngtlai and Champhai DHs. Lawngtlai DH also did not have Ophthalmologist and an ECG technician. There was a shortage of 14 Staff Nurses (10 *per cent*) in Aizawl Civil Hospital.

(Paragraph 3.1.1)

Recommendation

- *The State Government may prescribe/ adopt standards and norms for allocation of human resources for enhanced healthcare services and also undertake action to fill up the vacant posts.*

Non-availability of essential equipments for health facilities

None of the test-checked DHs were fully equipped with the essential equipments. Further, we observed issues in calibration of available equipment in the sampled DHs.

(Paragraphs 3.1.2 & 3.1.3)

Recommendations

- *State Government may ensure availability of full range of essential equipments in every DH, particularly in view of the increasing reliance on diagnostics for treatment of patients.*
- *Proper maintenance of equipments through Annual Maintenance Contracts may also be ensured to reduce the breakdown time of critical equipments for diagnosis.*
- *The DHs may ensure proper maintenance of record of periodic maintenance as well as calibrations of diagnostic equipments.*

Non-availability of essential drugs

The shortage of essential drugs ranged from 50 to 81 *per cent* in the test-checked DHs. The hospitals did not monitor and compile the status of availability of medicines in the Indoor pharmacies of the hospitals as such records pertaining to the Stock-out period during the audit period 2014-19 could not be verified in audit. Non-prescription of medicines in their generic name led to denial of low-cost medicines to the patients.

(Paragraph 3.2)

Recommendations

- *The State Government may put a sound and robust procurement system for timely supply of quality medicines as per the need of hospitals and ensure all time availability of essential drugs in each hospital.*
- *The State Government may streamline procurement of generic medicines and enforce the practice of prescribing medicines in generic name in line with* National Quality Assurance Standards (*NQAS*) *guidelines.*

Delivery of Healthcare Services

OPD Services

None of the three test checked DHs had online registration system. All surveyed patients could register at OPD counters in Champhai and Lawngtlai DHs within five minutes while 52 *per cent* of the patients surveyed in Aizawl CH took more than five minutes.

Essential Specialist OPD services such as Orthopaedic and ENT were not available in Lawngtlai DH, while Orthopaedic was not available in Champhai DH. Further, desirable OPD services such as Psychiatry, Geriatric and Dermatology were not available in both Champhai and Lawngtlai DHs.

(Paragraph 4.1)

Recommendations

- *The State Government should take steps for implementation of online Registration process and ensure documentation/ computerisation of clinical history of patients for easy retrieval of patient information.*
- *The State Government may ensure availability of basic facilities/ services in the OPD of each district hospitals as per IPHS norms.*

IPD Services

Services for IPD were not comprehensive since Psychiatry and Geriatric services were not available in Aizawl Civil Hospital, Orthopaedics services was not available in Champhai DH while Ophthalmology, ENT and Orthopaedics services were not available in Lawngtlai DH.

Trauma Care facilities were not yet operational in all the test checked DHs. Essential diagnostic services such as Microbiology, ENT and Endoscopy were not available in two (Champhai and Lawngtlai DHs) out of three test checked DHs. Turnaround time for diagnostic was not maintained in all the test checked DHs.

Further, records in support of disaster readiness were not available. Grievance Redressal system was not fully operational.

(Paragraphs 4.2 to 4.8)

Recommendations

- *Government may proactively synergise availability of specialised in-patient services along with the essential drugs, equipments and human resources in district hospitals.*
- *The availability of round the clock doctors and nurses in DHs needs to be ensured.*
- *The quality of diagnostic services which are crucial for patient care and treatment be made comprehensive as per requirements. The State Government/ hospital administration must ensure availability of all essential diagnostic services and equipments and improve turnaround time for diagnostic tests.*
- *All DHs be equipped with diagnostic tests for cancer detection.*
- *The Hospital administration may also ensure adequate documentation of availability of safety measures for verification.*
- *Adequate grievance redressal mechanism may be operationalised so that hospitals improve performance by tailoring interventions effectively to address the issues related to patient satisfaction.*
- *The Department may review disaster preparedness in all DHs and take remedial steps in coordination with State disaster management authorities.*

Support Services

Storage of Drugs

The prevailing system of storage of drugs in the test-checked hospitals was not conducive for orderly storage and as per norms/ parameters making the drugs susceptible to damage, contamination, theft.

There was no system to monitor and measure hospital associated infection rates in all the DHs. As such the number of hospital associated infection rates could not be ascertained. Incinerator was yet to be made operational in Lawngtlai DH. None of the sampled DHs had all the types of prescribed linen. While the shortage of types of linen in Champhai DH was six which was followed by Aizawl CH (four) and Lawngtlai DH (three), the shortfall of the available linen in terms of quantity ranged from one to 78 *per cent* in respect of Aizawl CH, 10 to 80 *per cent* in respect of Champhai DH and 14 to 80 *per cent* in respect of Lawngtlai DH.

(Paragraphs 5.1 to 5.5)

Recommendations

- *The system of storage of drugs needs to be strengthened so as to ensure their orderly storage as per norms/ parameters.*
- *The Bio-medical waste (BMW) Rules should be adhered to and followed rigorously to provide an infection free environment in the hospital.*
- *The Department may ensure availability of all types of prescribed linen in all the DHs.*

Maternal and Child Care, Cancer and HIV/ AIDS Care

Maternal Mortality Rates (MMR) and Infant Mortality Rates (IMR) in the State

The rate of stillbirths in the three test checked DHs ranged between 0.81 to 1.43 *per cent* during 2014-19. There was a high incidence of neonatal deaths in the test checked DHs ranging from 50 to 85.71 *per cent* during 2018-19.

A review of only ten sampled types of essential equipments for Labour Ward, Neonatal and Special Newborn Care Unit (SNCU) in respect of Champhai and Lawngtlai DHs revealed that the test checked hospitals did not have all the essential equipments such as foetal doppler, cardiotocography and cardiac monitor, required for child deliveries and care of new born babies. Further, a review of 27 types of essential equipments in Labour Ward, Neonatal and SNCU in Aizawl Civil Hospital revealed that various essential equipments such as incubator, phototherapy unit, cardiotocography, cardiac monitor, cardiotocography monitor, nebuliser, haemogloginometer were not available.

(Paragraph 6.1)

Recommendations

- *The Directorate of Health Services (DHS) and District Hospitals may investigate the causes and take appropriate specific steps to reduce high incidence of maternal and neonatal deaths.*
- *The State Government may strictly monitor the involvement of Accredited Social Health Activist (ASHA) workers of the Health Department for counselling of expectant mothers to reduce MMR and neonatal deaths.*
- *The Government may ensure that all the District Hospitals are equipped completely with all the essential equipments for child deliveries and new born baby care.*
- *The Department may specifically review the fire safety arrangements in SNCU/ Neonatal Intensive Care Unit (NICU) units of DHs considering high incidents of sick new born babies.*

Cancer and AIDS care in the State

The cancer cases in the State showed an increasing trend during the period from 2013 to 2017. The incidence of cancer increased from 1,581 cases in 2013 to 1,731 cases in 2017. Out of the three sampled DHs, Champhai and Lawngtlai DHs were ill equipped for diagnosis of cancer related tests. Further, none of the sampled hospitals maintained data on cancer *viz*., number and type of cancer cases detected/ diagnosed, number of cancer patients referred to specialised health care facilities, *etc*.

Number of HIV cases have more than doubled during 2014-19 as the number of HIV positive cases have increased from 1,280 in 2014-15 to 2,766 in 2018-19.

(Paragraphs 6.2 and 6.3)

Recommendation

- *The Government may strengthen the testing facilities for detection of Cancer and AIDS cases in the DHs of the State by providing required equipments.*

Overall Recommendations on Outcome Indicators

- *The Government should adopt an integrated approach, allocate resources in ways which are consistent with patient priorities and needs to improve the monitoring and functioning of the district hospitals towards facilitating a significant change in health outcomes.*
- *Corrective action be taken to reduce Left Against Medical Advice (LAMA) rates in Champhai DH.*
- *The referral rates from DHs need to be reduced by providing comprehensive and quality care in all DHs by increasing physical infrastructure and manpower in these DHs.*

What has been the response of the Government?

While providing general and specific response regarding efforts made at their level, which we have incorporated suitably in the Report, the Government have agreed with the recommendations and assured to take necessary action to improve the systems.

CHAPTER-1

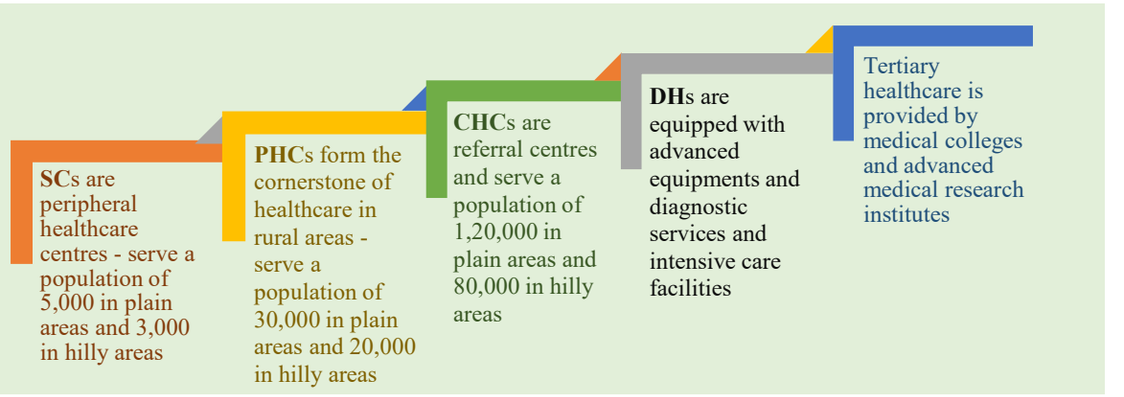
INTRODUCTION AND AUDIT FRAMEWORK

Chapter - 1: Introduction and Audit Framework

1.1 Introduction

Public healthcare delivery system in India is organised at three levels - primary, secondary and tertiary. The vast network of Sub-centres (SCs), Primary Health Centres (PHCs) and Urban Primary Health Centres (UPHCs), and Community Health Centres (CHCs) form the primary tier of Public healthcare delivery system for rural and urban population respectively. These health centres provide preventive and promotive services like immunisation, epidemic diagnosis, childbirth and maternal care, family welfare, *etc*. District Hospitals (DHs) serve as the secondary tier for rural and urban population. These hospitals handle treatment and management of diseases or medical conditions that require specialised care. Tertiary healthcare involves providing advanced and super-speciality services and is provided by medical institutions in urban areas, which are well equipped with sophisticated diagnostic and investigative facilities. The ascending levels of healthcare facilities are shown in the chart given below:

Chart-1.1: Levels of healthcare facilities



1.2 Overview of Healthcare Facilities in Mizoram

According to 2011 census, the total population of Mizoram stood at 10.97 lakh of which, 47.86 *per cent* (5.25 lakh) lived in rural areas while 52.14 *per cent* (5.72 lakh) lived in urban areas.

The State of Mizoram has eight DHs[1] and each DH is functioning under the administrative control and supervision of a Medical Superintendent (MS) who is assisted by a team of doctors, paramedics and other administrative staff. The State had one medical college at Aizawl.

Under the Constitution of India[2], health is a State subject. The healthcare services in a State can be evaluated on the basis of the achievement against benchmark of health indicators *viz.,* Birth Rate (BR), Death Rate (DR), Total Fertility Rate (TFR), Maternal Mortality Rate (MMR), Infant Mortality Rate (IMR), *etc*. The status of a few important health indicators of Mizoram *vis-à-vis* National average as per NITI Aayog are shown in table-1.1.

[1] Aizawl CH, Lunglei DH, Serchhip DH, Mamit DH, Champhai DH, Kolasib DH, Lawngtlai DH and Siaha DH as of March 2019

[2] Sl. No. 6 under List-II of the Seventh Schedule to the Constitution of India (Article 246 of Part XI)

Table-1.1: Health Indicators of Mizoram *vis-à-vis* National average

Sl. No.	Health Indicator	Mizoram			National		
		2011	2016	2018	2011	2016	2018
1.	BR (in *per cent*)	16.6	15.5	14.8	21.8	20.4	20.0
2.	DR (in *per cent*)	4.4	4.2	4.1	7.1	6.4	6.2
3.	TFR (in *per cent*)	1.6	NA	NA	2.4	2.3	2.2
4.	MMR (*per* lakh live birth)	--*	--*	135	178.0	130.0	113
5.	IMR (*per* 1,000 live birth)	34.0	27.0	18	44.0	34.0	33

Source: NITI Aayog/ Sample Registration System ** information not available*

The table above shows that Mizoram's health indicators were above that of the national average.

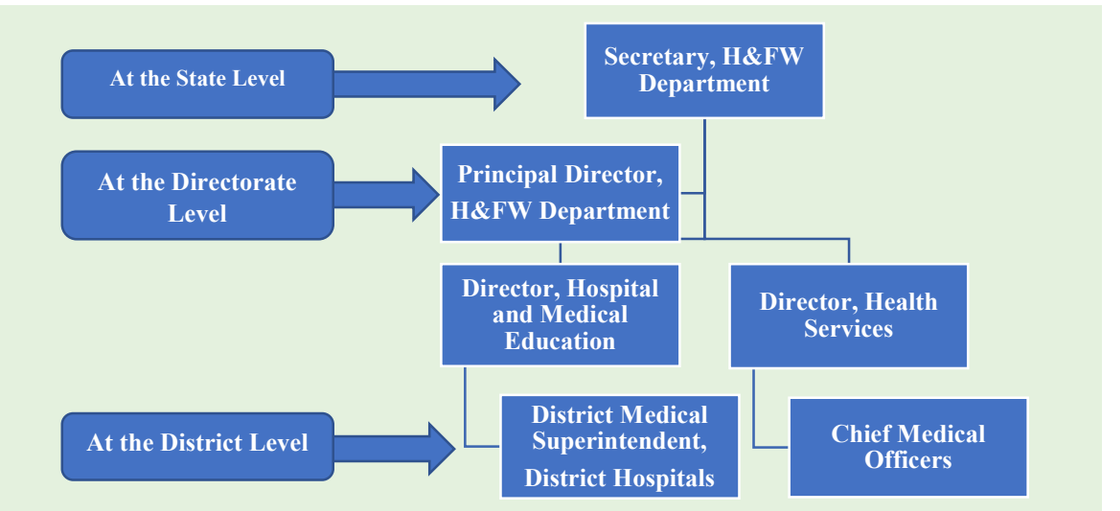
1.3 Accountability Structure for Healthcare in the State

The Health and Family Welfare (H&FW) Department, Government of Mizoram (GoM) is responsible for the management of Primary, Secondary and Tertiary Health Care Centres in the State.

Secretary, H&FW Department at the Government level and Principal Director, Health and Family Welfare Department at the Directorate level are responsible for overall functioning of the health centres/ hospitals under the Primary, Secondary and Tertiary level health services in the State. There are two directorates *viz*., Directorate of Hospital and Medical Education (DHME) and Directorate of Health Services (DHS). The DHME is entrusted with the responsibility of administration of DHs at the District Headquarters and all other Government hospitals while the DHS is responsible for the administration of the Sub-district hospitals, CHCs, PHCs, and SCs.

At the district level, District Medical Superintendent (DMS) and Chief Medical Officer (CMO) are responsible for functioning of DHs and primary level health services (SCs, PHCs and CHCs) respectively. Organisational structure of the Health and Family Welfare Department, GoM is as given below:

Chart-1.2: Organisational structure of the H&FW Department, GoM



1.4 Audit Framework

1.4.1 Background

The focus of India's National Health Policy, 2017 is to strengthen the trust of the common man in the public healthcare system by making it predictable, efficient, patient-centric, affordable and effective, with a comprehensive package of services and products that meet immediate healthcare needs of most people. It envisages attainment of its goal through a preventive and promotive health care orientation in all developmental policies, and universal access to good quality health care services without anyone having to face financial hardship as a consequence. Healthcare services in the North Eastern Region (NER) are inadequate, in terms of the number of health facility available as well as the quality of facilities provided. The primary reason for the inadequacy of healthcare services are hilly and difficult terrain, inadequate budgetary outlay for health, absence of specialist doctors and other Medicare personnel, inadequate availability of sophisticated diagnostic equipment and limited presence of private sector in healthcare.

As per the Government of India (GoI) (written statement of the Union Minister of State for Health and Family Welfare in Parliament), as of June 2019, the entire NER accounted for about l0 *per cent* (88 out of 851) of the district hospitals available across the country.

In this context, delivery of health care in Mizoram, a hilly state with difficult terrain, spread over a geographical area of about 21,081 sq. km., a population density of 52 persons per sq. km. and very limited participation of private health care providers compared to the rest of the country is a challenge. Since the majority of the population is mostly dependent on government hospitals, the efficient functioning of the public healthcare system is critical.

Mizoram accounted for eight out of these 88 (10 *per cent*) district hospitals in the NER. Provision of healthcare services by Government of Mizoram has been reviewed by the Comptroller and Auditor General of India (C&AG) which was reported in the Audit Report pertaining to the year ended 31 March 2016.

In this background, it was decided to conduct Performance Audit of healthcare services being provided at DHs in the State to assess the availability of resources identified as essential by Indian Public Health Standards (IPHS) and to evaluate the quality of healthcare services being provided by these hospitals in some selected domains.

1.4.2 Audit Domains

The following audit domains/ themes were identified for the performance audit of district hospitals:

Chart-1.3: Audit Domains

Resources	Line Services	Support Services	Auxiliary Services
• Manpower • Infrastructure • Equipment • Drugs & Consumables	• Out-patients • In-patients • Emergency • Operation & ICU • Laboratory & diagnostics	• Drug storage • Hygiene • Infection control • Ambulance • Power backup	• Patient rights • Patient safety • Referral services

1.4.3 Audit Objectives

In pursuance of the audit domains/ themes identified above, the objectives of carrying out a Performance Audit of select DHs are to assess whether:

i. adequate and essential resources - manpower, drugs, infrastructure, equipment and consumables are available for effective functioning of the district hospitals;

ii. timely and quality healthcare is delivered through line services like OPD, IPD, ICU, OT, trauma & emergency, *etc*. and diagnostic services;

iii. support services like drug storage, sterilisation, hygiene, waste management, infection control, ambulance, power back-up/ UPS, *etc*. are aiding the line departments in providing a safe and sterile environment; and

iv. the adequacy and timeliness of healthcare services relating to maternal and infant care, cancer, and HIV/ AIDS.

1.4.4 Audit Criteria

Audit findings were benchmarked against the criteria sourced from the following:

- Indian Public Health Standards (IPHS) guidelines for district hospitals;
- NHM guidelines 2005 and 2012;
- National AIDS Control Organisation (NACO) Programmes guidelines;
- Janani Sishu Suraksha Karyakram (JSSK) guidelines;
- National Quality Assurance Standards (NQAS) for district hospitals;
- Swachchhta guidelines for public health facilities, GoI;
- Assessor's Guide Book for Quality Assurance in District Hospitals 2013, GoI;
- Operational guidelines for prevention, screening and control of common non-communicable diseases, GoI;
- Indian Council of Medical Research (ICMR) guidelines on Hospital Infection Control;
- Bio-Medical Waste (Management and Handling) Rules, 1998 & 2016;
- Operational framework for management of common cancers, GoI;
- Maternal and new born Health Tool kit, 2013; and
- Government policies, orders, circulars, budgets, annual reports, *etc.*

1.4.5 Scope of Audit and Methodology

The Performance Audit covered the five year period from 2014-15 to 2018-19 and involved scrutiny of records in the offices of Director, Hospital & Medical Education; Mission Director, NHM; District Medical Superintendents (DMSs) and three selected DHs.

We test-checked records of the Department and the Directorate of Health and Family Welfare to understand policy initiatives, prioritisation of activities, funding and overall support. Field audit was carried out between November 2019 to February 2020 and records of the selected DHs were scrutinised; healthcare facilities and infrastructure were

physically inspected, on a sample basis, along with the concerned hospital authorities to assess the quality of healthcare services being provided. The benchmarks were with reference to National Quality Assurance Standards (NQAS) for district hospitals. Data in the Hospital Management Information System (HMIS) of the State were analysed and compared with that of the basic records maintained at the hospital level. Samples were drawn from the hospital level data and direct substantive checking was carried out to gain assurance about the integrity of data uploaded in the HMIS. Photographic evidence was taken, where necessary, to substantiate audit findings. Patient feedback was obtained through a structured questionnaire to gauge the extent and quality of healthcare services being provided by the sampled DHs.

An Entry Conference was held on 18 November 2019 with the Health and Family Welfare Department and other officers wherein audit objectives, scope, criteria, *etc*. were discussed and the inputs of the Department were obtained.

The draft Report of the Performance Audit was sent (August 2020) to the State Government for their comments and an ***'Exit Conference'*** was held on 11 December 2020 to discuss the audit findings. Replies furnished by the Department and views expressed during the Exit Conference have been suitably incorporated in the Report.

1.4.6 Audit Sample

There were eight districts in the State of Mizoram as of March 2019, each district having a DH. Three out of the eight DHs were selected on the basis of Probability Proportional to Size Sampling Without Replacement (PPSWOR) method with size measure being the total number of patients in the DHs during the period 2014-15 to 2018-19. The selected hospitals were:

(i) Aizawl Civil Hospital (269-Bedded), Aizawl District,

(ii) Champhai District Hospital (87-Bedded), Champhai District and

(iii) Lawngtlai District Hospital (34-Bedded), Lawngtlai District

Besides, one Community Health Centre (CHC) and one Primary Health Centre (PHC) *viz*., Saitual CHC and Thingsulthliah PHC located within the district hospital radius in the capital district (Aizawl) were covered in audit to examine the number and nature of cases that are being referred to the DH from the primary and secondary health care facilities, relating especially to maternal and child care issues.

1.5 Acknowledgement

The Office of the Accountant General, Mizoram acknowledges the cooperation extended by the officers and staff of the Health and Family Welfare Department as well as the selected DHs during conduct of this Performance Audit.

CHAPTER-2

FINANCIAL RESOURCES

Chapter - 2: Financial Resources

2.1 Fund Management

The Health & Family Welfare Department, Government of Mizoram received funds from two main sources: (i) State budget, and (ii) Grants-in-Aid from GoI, under National Health Mission (NHM) with corresponding share of the State Government.

2.1.1 Funds under State Budget

As per the National Health Policy (NHP), 2002, State Governments were expected to increase commitment to Health Sector up to eight *per cent* of their Budget by 2010 while NHP, 2017 envisaged raising public health expenditure to more than eight *per cent* of the budget by 2020.

The Budget and expenditure of the State *vis-à-vis* Health Sector during the years 2014-15 to 2018-19 is given in table-2.1:

Table-2.1: Budget and expenditure *vis-à-vis* Health Sector of the State

(₹ in crore)

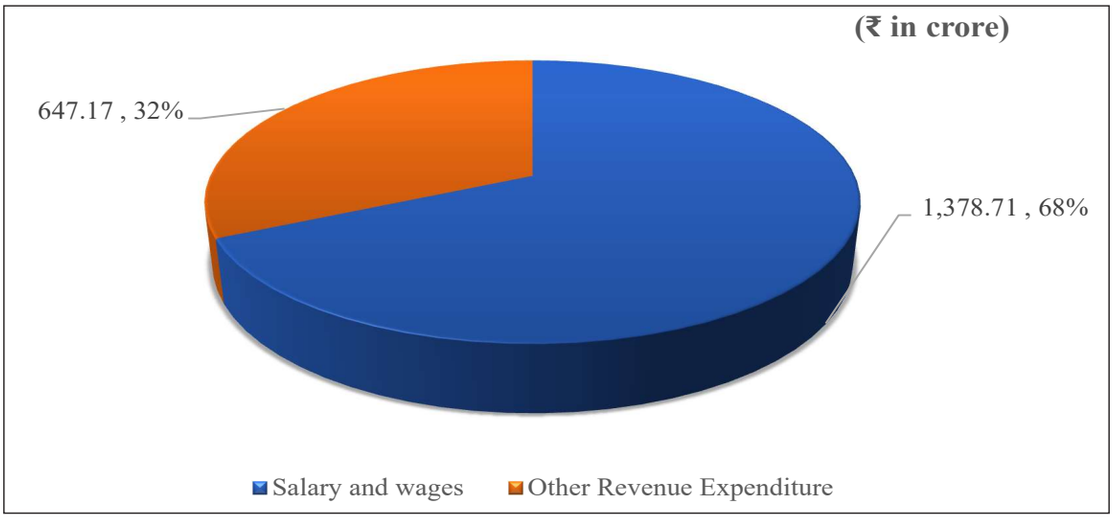
Year	State		Health		Health sector budget/ Expenditure expressed as *per cent* of State Budget	
	Budget	Expenditure	Budget	Expenditure	Health Budget	Health Expenditure
2014-15	9,106.50	7,868.97	444.88	331.53	4.89	4.21
2015-16	8,883.15	6,956.67	552.60	374.13	6.22	5.38
2016-17	9,864.03	7,580.40	573.63	399.95	5.82	5.28
2017-18	11,089.46	9,284.96	733.44	547.86	6.61	5.90
2018-19	12,599.30	9,790.41	754.34	576.85	5.99	5.89
Total	**51,542.45**	**41,481.40**	**3,058.89**	**2,230.31**	**5.93**	**5.38**

Source: Appropriation Accounts

It can be seen from the table above that the expenditure of the State Government was ₹ 41,481.40 crore against the budget outlay of ₹ 51,542.45 crore and the expenditure on Health Sector was ₹ 2,230.31 crore against the budgeted amount of ₹ 3,058.89 crore during the period from 2014-15 to 2018-19. The expenditure on Health Sector accounted for 5.38 *per cent* of the total expenditure of the State during the five year period. The actual expenditure on Health Sector was much lower than the budgeted provision, the shortfall ranging between ₹ 113.35 crore (2014-15) and ₹ 185.58 crore (2017-18). The expenditure on Health Sector fell short of the NHP stipulation ranging from 3.06 to 4.36 *per cent* during the five-year period.

Out of the total expenditure of ₹ 2,230.31 crore incurred on Health during 2014-19, revenue expenditure constituted ₹ 2,025.88 crore (90.83 *per cent*) while capital expenditure was ₹ 204.43 crore (9.17 *per cent*). Revenue expenditure (component-wise) incurred by the Health and Family Welfare Department during 2014-19 is presented in the following chart:

Chart-2.1: Component wise revenue expenditure during 2014-19



Source: Data from Voucher Level Compilation, AG, Mizoram

As can be seen from the chart above, 68 *per cent* of the revenue expenditure was incurred on human resources (salary and wages); while 32 *per cent* was incurred towards Office Expenses (₹ 26.36 crore), Supplies and Materials (₹ 14.45 crore), Machinery and Equipment (₹ 155.52 crore), Motor Vehicles (₹ 4.67 crore), Other charges (₹ 56.00 crore), *etc*. The expenditure under these heads increased by 47.16 *per cent* from ₹ 98.00 crore in 2014-15 to ₹ 144.22 crore in 2018-19. Further, expenditure on Supplies and Material showed a decreasing trend as it declined to ₹ 1.45 crore in 2017-18 from ₹ five crore in 2014-15. However, in 2018-19, the expenditure reached to the level of 2014-15. Moreover, expenditure on Machinery and equipment increased from ₹ 2.44 crore in 2014-15 to ₹ 34.13 crore in 2018-19.

The Department was not efficient in spending their budget since the savings during the period 2014-19 were to the tune of ₹ 828.58 crore and ranged between 25 to 32 *per cent* during the period. The State Government stated (October 2020) that due to financial crunch, the State could not allocate funds as per target set under NHP.

2.1.2 Funds under National Health Mission

Government of Mizoram received substantial funds from Government of India under National Health Mission (NHM) as detailed in the table below:

Table-2.2: Allocation and expenditure under NHM

(₹ in crore)

Year	Opening Balance	Source of Funds				Expenditure	Closing Balance	Percentage of utilisation
		GoI	GoM	Interest	Total			
2014-15	15.31	77.36	5.72	0.12	98.51	54.71	43.80	55.54
2015-16	43.80	73.74	4.55	0.41	122.50	97.30	25.20	79.43
2016-17	25.20	84.92	8.30	0.69	119.11	93.38	25.73	78.40
2017-18	25.73	85.66	9.23	0.59	121.21	104.05	17.16	85.84
2018-19	17.16	84.91	16.08	2.04	120.19	100.68	19.51	83.77
Total		**406.59**	**43.88**	**3.85**	**469.63**	**450.12**		**95.85**

Source: Mission Director, NHM Mizoram

From the above table, it can be seen that the percentage of utilisation of available fund under NHM ranged between 55.54 and 85.84 *per cent* during 2014-15 to 2018-19 leaving a substantial balance during all years of the audit period.

2.1.3 Funds position of sampled District Hospitals

The expenditure of the three test-checked district hospitals *vis-à-vis* the total expenditure on Health during 2014-19 was given in table-2.3:

Table-2.3: Expenditure of sampled DHs

(₹ in crore)

Year	State expenditure on health	Aizawl CH		Champhai DH		Lawngtlai DH	
		(in crore)	(in *per cent)*	(in crore)	(in *per cent)*	(in crore)	(in *per cent)*
2014-15	331.53	33.22	10.02	3.37	1.02	2.23	0.67
2015-16	374.13	32.73	8.75	2.94	0.79	2.04	0.54
2016-17	399.95	37.98	9.50	3.79	0.95	2.79	0.70
2017-18	547.86	40.00	7.30	4.07	0.74	2.97	0.54
2018-19	576.85	45.08	7.82	4.36	0.76	3.48	0.60
Total	**2,230.32**	**189.01**	**8.47**	**18.53**	**0.83**	**13.50**	**0.61**

Source: Voucher Level Compilation data

It can be seen from above that the expenditure incurred by the test-checked DHs was 9.91 *per cent* of the total expenditure incurred by the State Government on Health during the period 2014-15 to 2018-19. The expenditure of Aizawl Civil Hospital ranged from 7.30 to 10.02 *per cent* during the five year period while the expenditure of Champhai and Lawngtlai District Hospitals accounted for less than one *per cent* of the total expenditure of the State on Health during the five year period from 2014-15 to 2018-19.

Conclusion

The total expenditure on Health was ₹ 2,230.31 crore during the period 2014-19 and it had increased from ₹ 331.53 crore to ₹ 576.85 crore during the period. The Capital Expenditure was 9.17 *per cent* of the total expenditure during the period.

The total budget allocation for Health Sector by the State Government as compared to the overall State Budget for the period 2014-19 fell short of NHP, 2002 and NHP, 2017 stipulation in all the years. The budget allotment and expenditure of the Health and Family Welfare Department against the overall State Budget and State expenditure during 2014-19 was 5.93 *per cent* and 5.38 *per cent* respectively even as the National Health Policy, 2017 envisaged allocation of at least eight *per cent* of the total budget of the State for Health Sector.

Recommendation

The State Government may enhance the budget provision and expenditure on healthcare services to ensure that adequate and quality healthcare services are provided to the people of the State.

CHAPTER-3

ESSENTIAL RESOURCES MANAGEMENT

Chapter - 3: Essential Resources Management

Adequacy of essential resources - manpower, drugs & consumables, equipment, and infrastructure for the effective functioning of the district hospitals

3.1 Standardisation of Service and Resources

For ensuring efficient operation of public sector hospitals, it is essential to prescribe norms for providing various resources in the hospitals. On the basis of these norms, requirement of resources should be assessed and provisions should be made accordingly. Further, facility development plans comprising of components such as infrastructure, equipment, human resources, drugs and supplies, quality assurance systems and service provisioning were to be prepared for each hospital. These plans were to be prepared on the basis of analysis of gaps in the health facilities *vis-à-vis* the norms. As per IPHS, human resources were to be provided with reference to the bed capacity of the hospitals.

It was seen in Audit that the State government had not standardised the bed strength of each DH based on the size of the population to be covered and the services to be delivered. No norms had also been laid out for allocation of human resources to the DHs. It was also seen that no sanctioned strength had been notified for various human resources to be deployed in the DHs. The Department did not follow the IPHS norms for deployment of manpower in the DHs.

3.1.1 Human Resources

The status of availability of human resources in the sampled DHs as compared to the IPHS norms is given in table-3.1:

Table-3.1: Shortage of specialist doctors, staff nurses and technicians in the selected DHs *vis-à-vis* IPHS norms

Sl. No.	Name of the Department	Aizawl CH (bed capacity 200-300)		Champhai DH (bed capacity 50-100)		Lawngtlai DH (bed capacity 31-50)	
		Requirement	Shortage (*per cent*)	Requirement	Shortage (*per cent*)	Requirement	Shortage (*per cent*)
1.	Medicine	3	0(0)	1	0(0)	1	0(0)
2.	Surgery	3	0(0)	1	0(0)	1	0(0)
3.	Obstetrics and Gynae	4	0(0)	1	0(0)	1	0(0)
4.	Paediatrics	4	0(0)	1	0(0)	1	0(0)
5.	Anaesthesia	3	0(0)	1	0(0)	1	0(0)
6.	Ophthalmology	2	0(0)	1	0(0)	1	1(100)
7.	Orthopaedics	2	0(0)	1	1(100)	1	1(100)
8.	Radiology	2	0(0)	1	1(100)	1	1(100)
9.	AYUSH[3] Doctors	1	0(0)	1	0(0)	1	0(0)
10.	Staff Nurse	135	14(10)	30	0(0)	18	0(0)
11.	ECG[4] Technician	3	0(0)	1	0(0)	1	1(100)
12.	Laboratory Technician (Lab + Blood storage)	12	0(0)	5	0(0)	4	0(0)

[3] AYUSH - Ayurvedic, Yoga and Naturopathy, Unani, Siddha and Homeopathy
[4] ECG - Electrocardiography

Sl. No.	Name of the Department	Aizawl CH (bed capacity 200-300)		Champhai DH (bed capacity 50-100)		Lawngtlai DH (bed capacity 31-50)	
		Requirement	Shortage (*per cent*)	Requirement	Shortage (*per cent*)	Requirement	Shortage (*per cent*)
13.	Radiographer/ X-ray tech	5	0(0)	2	0(0)	1	1(100)

Source: Records of DHs

In Champhai DH, Orthopaedic doctor and Radiologist were not available. In Lawngtlai, there was no Ophthalmologist, Orthopaedic Doctor, Radiologist and ECG Technician. The above shortages would impact provision of public healthcare services in districts. CH Aizawl had shortage of 14 Staff Nurses (10 *per cent*).

The Department accepted (October 2020) that there were no approved staffing norms and it does not follow IPHS norms. However, the Department rationalised posting of manpower in DHs based on requirement and size of population. During the Exit Conference (11 December 2020) the Principal Director, Health & Family Welfare Department stated that proposal for fixing sanctioned strength was submitted to the State Government. However, there was no positive outcome as on date. It was also stated that due to ban on creation of and filling up of posts imposed by the State Government, shortage of manpower could not be solved. Besides, there was no radiologist available for appointment.

Conclusion

The Department had not fixed sanctioned strength for deployment of manpower in DHs. There was shortage of one specialist doctor each in Ophthalmology, Orthopaedics and Radiology in Lawngtlai DH. Lawngtlai DH also did not have an ECG technician as per IPHS norms. No Orthopaedics and Radiologist were posted in Champhai DH while there was a shortage of 14 staff nurses in Aizawl Civil Hospital.

Recommendation

The State Government may prescribe/ adopt standards and norms for allocation of human resources for enhanced healthcare services and also undertake action to fill up the vacant posts.

3.1.2 Shortage of Equipments

Equipment is an important component for providing assured service by the DHs. The IPHS norms stipulate list of essential equipments required for the delivery of assured services by the DH. As per IPHS norms, every DH should have the essential equipment for various services. Numbers of essential equipment available in the sampled DHs as against the equipment required as per norms are given in table-3.2:

Table-3.2: Availability of essential equipment

Name of District Hospital (No. of beds)	No. of equipment required as per norms	No. of equipment actually available and operational as on date of audit *(per cent)*	Shortage *(per cent)*
CH, Aizawl (269)	338	236 (70)	102 (30)
DH, Champhai (75)	210	125 (60)	85 (40)
DH, Lawngtlai (34)	211	116 (55)	94 (45)

Source: Records of test-checked DHs

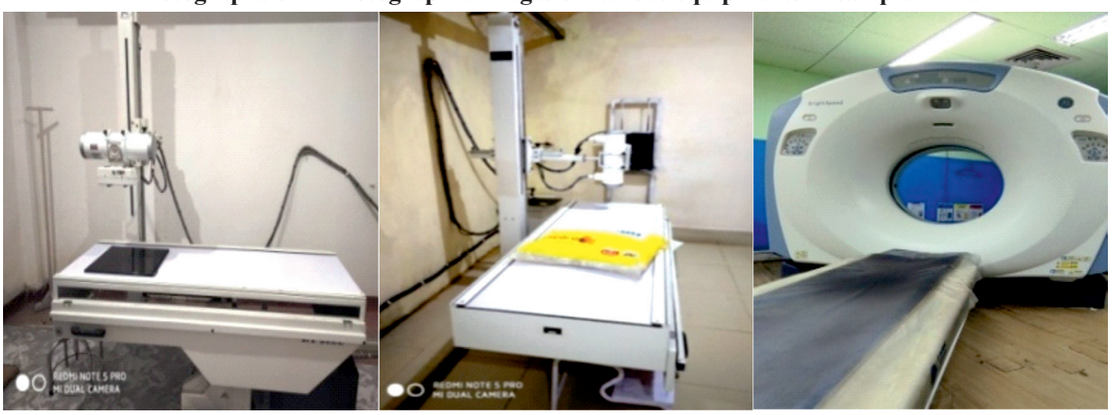
It was noticed in audit that:

(A) **Aizawl CH:** Out of 338 essential equipments to be provided as per IPHS (200 to 300 beds), 236 essential equipments (70 *per cent*) were available while there was a shortage of 102 essential equipments (30 *per cent*). It was however observed that Computed Tomography scan (CT scan) facility was also available in the Aizawl CH.

(B) **Champhai DH:** Out of 210 essential equipments to be provided as per IPHS (51-100 beds), 125 essential equipments (60 *per cent*) were available while there was a shortage of 85 essential equipments (40 *per cent*). It was however noticed that Champhai DH was equipped with desirable equipments like 500 Milli ampere (MA) X-Ray, (Imaging), applanation (eye equipment) and colposcope (surgical equipment).

(C) **Lawngtlai DH**: Out of 211 essential equipments to be provided as per IPHS (31-50 beds), 116 essential equipments (55 *per cent*) were available while there was a shortage of 94 essential equipments (45 *per cent*). It was however, noticed that Lawngtlai DH was equipped with desirable equipments like 500 MA X-Ray, 300 MA X-Ray, 50 MA X-Ray (Imaging), proctoscopy set (surgical equipment), colonoscope and colposcope (Endoscopy equipment).

Photographs-3.1: Photographic images of various equipments in sampled DHs



500 MA X-Ray, Lawngtlai DH **500 MA X-Ray, Champhai DH** **CT Scan, Aizawl CH**

3.1.3 Calibration, repairs and downtime of equipments[5]

For smooth operation, timely repairs and maintenance of equipment is required to be done in order to ensure that the machines are functional in times of need; and to ensure accurate results, that show, calibration of equipment is required to be done periodically.

As per Meeting minute (November 2014) of the Executive Committee of Rogi Kalyan Samiti (RKS), Civil Hospital, Aizawl, calibration of medical equipment was done by Nutech Calibrators & Engineers, Kolkata in 2014. Further, it was seen that M/s Caltech Laboratory Services, Kolkata and Measures Techno Lab, Kolkata conducted calibration

[5] Downtime of equipment refers to the amount of time that equipment is not operating whether due to unplanned equipment failure (faulty or broken part) or planned downtime (preventive maintenance)

of equipment in 2017. However, relevant records of calibration for the years 2015-16, 2016-17 and 2018-19 were not available.

For Champhai and Lawngtlai DHs, contract for calibration of equipment was awarded (April 2016) to HITES (HLL Infra Tech Services Limited), a fully owned subsidiary of HLL Lifecare Limited, Uttar Pradesh (A GoI enterprise under the MoH&FW) for the period from May 2016 to April 2021. However, relevant records (maintenance register, calibration certificates, *etc*.) for the five year period were not available at the DHs for verification. Hence, due to poor/ absent documentation of records, we could not verify how many calibration requirements were done and number missed out and the pendency in calibration during the five years period.

It was also seen in Audit that in the event of breakdown of equipment, the practice was that a complaint would be lodged to the designated officers (Medical Superintendent) who would, in turn instruct the service providers for necessary remedial action. Scrutiny of records pertaining to maintenance of equipment in Aizawl CH revealed that the downtime period for 21 equipments (ICU) ranged between one day and 56 days. Out of this, there were nine instances during the period where breakdown of equipment was for more than three days.

It was however noticed that relevant documents *viz.,* terms and conditions, job description, location and description of equipment, which form an integral part of the agreement was not furnished for audit scrutiny. In absence of such important documents audit could not ascertain the prescribed time-line for the service provider to attend to such complaints.

The Department stated (October 2020) that due to shortage of funds for procurement, essential equipments were not purchased. It was also stated that calibration of equipment was carried out regularly in Aizawl Civil Hospital. However, supporting records/ certificates of calibration was yet to be furnished as of date. The Department also stated that DHs would be instructed to maintain relevant records such as maintenance register, calibration certificates, *etc*. properly.

Conclusion

Medical equipment/ devices facilitate healthcare personnel to monitor patient health more accurately and help doctors perform various functions from the emergency room to the operating table. The bottom line is that to be able to administer quality health care services, medical equipment must always be available and functioning effectively.

Audit observed that the DHs did not have all the essential diagnostic equipments required by them. The maintenance of available equipment was unsatisfactory as seen from the delays/ downtime in their repairs. The hospitals had not kept any documentation of the services provided by the service provider. The maintenance contracts need to be strictly administered to ensure that costly equipments were available to assist the doctor and in turn the patients.

Recommendations

i. State Government may ensure availability of full range of essential equipments in every DH, particularly in view of the increasing reliance on diagnostics for treatment of patients.

ii. Proper maintenance of equipments through Annual Maintenance Contracts may also be ensured to reduce the breakdown time of critical equipments for diagnosis.

iii. The DHs may ensure proper maintenance of record of periodic maintenance as well as calibrations of diagnostic equipments.

3.2 Drugs Management

Drugs were generally procured by the H&FW Department, GoM and stored centrally at Central Medical Store (CMS), Zemabawk, Aizawl. From CMS, Zemabawk, they are sent to the DHs, CHCs, PHCs and Sub-Centres from time to time. Drugs were also locally procured by the DHs from RKS fund as and when required.

3.2.1 Shortage of essential drugs

As per the Mizoram State Essential Medicine List-2013 (EDL) notified by the H&FW Department, GoM, a DH is required to have at least 280 essential medicines in order to provide minimum assured services. However, the District Hospitals stated that the Mizoram State Essential Medicine List-2013 was not circulated to the District Hospitals by the H&FW Department, GoM.

The status of availability of essential drugs in the sampled DHs during 2014-19 is depicted in table-3.3:

Table-3.3: Status of availability of essential drugs as per Mizoram State Essential Medicine List-2013

Hospital	Types of essential drugs for a DH	No. of essential drugs actually available on date of Audit	Stock-out period[6] during 2014-15 to 2018-19
Aizawl CH	280	26	Records not available
Champhai DH	280	106	Records not available
Lawngtlai DH	280	141	Records not available

Source: Records of test-checked DHs

It was noticed that:

- Against 280 different types of medicines required to be available as per Mizoram State Essential Medicine List-2013, only 26 (nine *per cent*), 106 (38 *per cent*) and 141 (50 *per cent*) essential medicines were available at the time of spot verification in Aizawl CH, Champhai DH and Lawngtlai DH respectively; and
- In addition, in all the three DHs, records pertaining to the Stock-out period during the audit period 2014-19 were not available since the hospitals did not monitor and compile the status of availability of medicines in the Indoor pharmacies.

[6] Stock-out period is the complete absence of a specific formulation and/ or dosage of medicine at a given facility at a given period time

Further, it was seen that there was a system of outsourcing of drug store to private parties by the district hospital drugs canteen managing committees.

Audit observed that there is a high probability that the outsourced drug stores attached with the DHs would also not be having all the essential medicines as the DHs themselves which had outsourced the services to these stores did not have a copy of the EDL.

A survey of 58 IPD patients was conducted during December 2019 (Champhai DH - five patients), January 2020 (Lawngtlai DH - four patients) and March 2020 (Aizawl CH – 49 patients) regarding availability of essential services in the hospitals. Out of the 58 respondents, 13 patients (22.41 *per cent*) responded that all medicines prescribed to them were available in the DHs, 43 patients (74.13 *per cent*) responded that medicines were mostly available and two patients (3.45 *per cent*) responded that medicines were available on few occasions.

3.2.2 Generic medicines

As per NQAS guidelines for Assessment, prescription of medicine by medical officer should be in generic name only.

Internal prescription audit, by a Committee of doctors constituted internally, was done periodically on sampled OPD cards collected from various hospital departments in Aizawl CH in which prescription of medicine by generic name was one of the components analysed. Number of prescription of medicines in generic name at OPD clinics against the total number of prescriptions during the period January-July 2018 are given in table-3.4:

Table-3.4: Prescription of generic medicine in OPD Clinics of Aizawl CH

Period of Audit	No. of OPD cards collected	No. of prescriptions in generic name	No. of prescription without generic name	No. of prescription partly in generic name
January to April 2018	100	4	86	10
May 2018	38	5	29	4
June 2018	32	9	20	3
July 2018	23	0	23	0
Total	**193**	**18**	**158**	**17**
Percentage		**9.33**	**81.86**	**8.81**

Source: Hospital's record

It can be seen from the above that out of 193 prescriptions collected during January 2018– July 2018, generic names of the medicines were prescribed only in 18 cases (9.33 *per cent*) and 17 prescriptions (8.81 *per cent*) contained generic names of medicines written partly while in the remaining 158 prescriptions (81.86 *per cent*), medicines were not prescribed in generic name.

Comments of the reports of prescription audit on generic medicines are reproduced below:

"There is improvement in prescribing drugs by generic name but still needs to improve (January 2018 to April 2018). There is no improvement in prescribing drugs by generic name (May 2018-July 2018)".

It was noticed in audit that generic medicines were neither procured nor prescribed in Lawngtlai and Champhai DHs.

The Department stated (October 2020) that proposal for purchase of essential medicines as listed in the EDL for all DHs would be submitted to the Government. A copy of the EDL would also be given to the outsourced Drugs stores attached to the DHs with a request to update the list. The DHs would also be instructed to maintain stock record of medicines properly. During the Exit Conference (11 December 2020), the Department stated that the practice of prescribing medicines in generic name could not be fully implemented due to technical problems in procuring generic medicines.

Conclusion

The shortage of essential drugs ranged from 50 to 81 *per cent* in the test checked DHs. The hospitals did not monitor and compile the status of availability of medicines in the Indoor pharmacies of the hospitals as such records pertaining to the Stock-out period during the audit period 2014-19 could not be verified in audit. Further, the availability of all essential medicines in the outsourced drug stores attached with the DHs was doubtful since the DHs which had outsourced the services to these stores themselves did not have a copy of the Essential Medicine List-2013. Medicines were not prescribed in their generic name, which was against the NQAS guidelines, leading to denial of low-cost medicines to patients.

Recommendations

i. The State Government may put a sound and robust procurement system for timely supply of quality medicines as per the need of hospitals and ensure all time availability of essential drugs in each hospital.

ii. The State Government may streamline procurement of generic medicines and enforce the practice of prescribing medicines in generic name in line with NQAS guidelines.

CHAPTER-4

DELIVERY OF HEALTHCARE SERVICES

Chapter - 4: Delivery of Healthcare Services

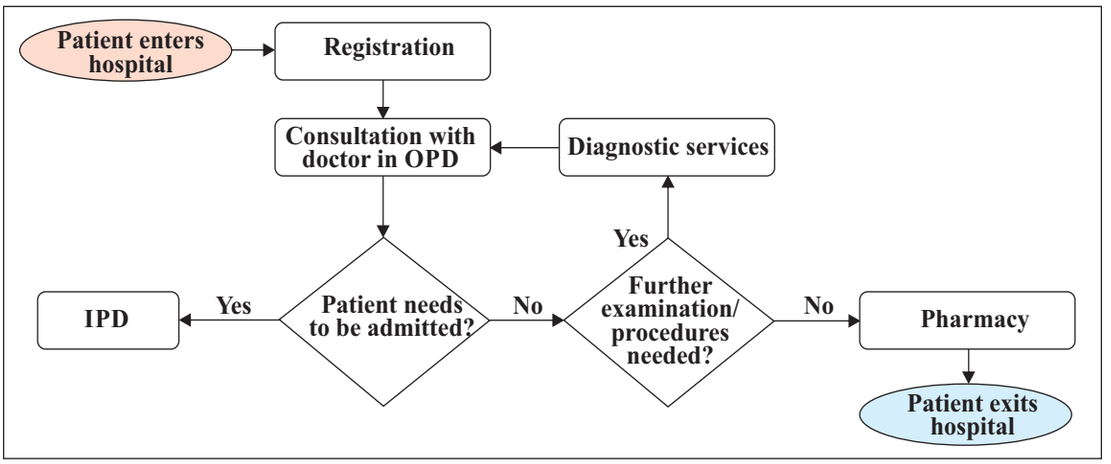
Delivery of OPD, IPD, ICU, OT, Trauma & Emergency and Diagnostic services

High-quality healthcare services involve the right care, at the right time, responding to the users' needs and preferences, while minimising harm and wastage of resources. Quality healthcare increases the likelihood of desired health outcomes. Audit observations on delivery of timely and quality healthcare services in the test-checked DHs through line services like Out-Patient Department (OPD), In-Patient Department (IPD), Intensive Care Unit (ICU), Operation Theatre (OT), Trauma & Emergency and Diagnostic services are discussed in the succeeding paragraphs.

4.1 Out Patient Department (OPD) Services

To avail of services in a hospital, patients first register at the registration counter of the hospital. They are then examined by the OPD doctors, and further diagnostic tests are prescribed, where necessary, for evidence based diagnosis and/ or drugs are prescribed or admission in IPD is advised based on the diagnosis. The detailed process flow is shown in the chart below:

Chart-4.1: Flow of patient services



DHs account for more than 70 *per cent* of OPD patients in Champhai[7] and Aizawl[8] during 2015-19 while share of OPD patients in Lawngtlai DH[9] was more than 50 *per cent* during the years except for the year 2016-17 in which, it was lower at 45.26 *per cent* than the share of private hospital.

Audit findings pertaining to OPD services like registration, consultation, waiting time and other basic OPD facilities/ services in the test-checked DHs are discussed below:

[7] There were two private hospitals in Champhai district as of March 2019
[8] There were 14 private hospitals and three government hospitals in Aizawl district as of March 2019
[9] There was one private hospital in Lawngtlai district as of March 2019

4.1.1 Registration service in test-checked DHs

Registration counter is the first point of contact with the hospital for a patient and is an important component of hospital experience for patients and their attendants. Registration is a process of enrolling patients into the records of the hospital to provide services to the patients and keep track of various services that are availed by each patient. This is also the first step to generate a medical record of the patient in which all medical details of the patient are documented. IPHS norms envisage computerised registration. It is desirable that the registration process is computerised and able to collect patient information such as age, sex, address, ailment and previous patient information in old cases in a quick manner so that unnecessary delay is avoided.

As part of the "Digital India" initiative, GoI launched *e*-Hospital platform on 1st July 2015 during the launch of Digital India Week. The common patient portal (*https://www.ors.gov.in*) of *e*-Hospital platform facilitates hospitals to provide various online services to the patients such as on-line OPD appointment, viewing of laboratory reports, status of availability of blood in blood banks, *etc*. by registered mobile Number or Unique Hospital Identification Number (UHID). Identity of the patients is confirmed digitally using Aadhaar authentication service provided by Unique Identification Authority of India (UIDAI) to ensure that only genuine patients are given online OPD appointments.

Audit noticed that online patient registration in e-hospital mode was not implemented in any of the sampled DHs in the State. However, Aizawl CH had computerised the registration of patient while it was done manually in Champhai and Lawngtlai DHs.

Audit also observed that none of the hospitals (including the DHs having computerised registration) were able to retrieve previous patient information; as such, patients had to register afresh, even for treatment of the same ailments.

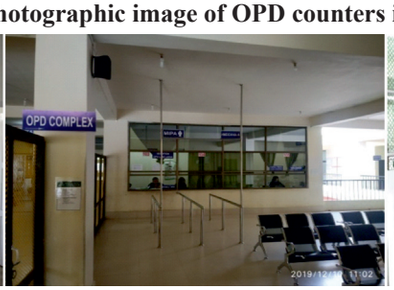
Further, the 'waiting time' at the Reception/ Registration counter of a hospital plays a vital role in developing trust in the quality of service medical treatment or diagnosis and long waiting time in hospital causes dissatisfaction among patients.

Patient satisfaction survey by Audit in the sampled DHs during the course of Audit (November 2019 - March 2020) indicated that it took between 5 to 120 minutes between registration of patients and examination by doctors.

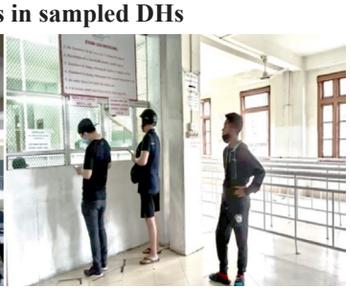
In the absence of online registration system, a more effective follow-up, diagnosis and treatment of patients in future visits, was not possible.

Photographs-4.1: Photographic image of OPD counters in sampled DHs

OPD ticket counter, Lawngtlai DH



OPD ticket counter, Champhai DH



OPD ticket counter, Aizawl CH

4.1.2 Patients load in OPD

IPHS norms prescribe that workload in OPD should be studied and measures should be taken to reduce the waiting time for registration, consultation, diagnostics, pharmacy, *etc*. The norms also prescribe that hospitals should develop standard operating procedures (SOP) for OPD management, train the staff and implement the SOP. Year-wise position of patients handled by the OPD clinics in the sampled DHs is depicted in table-4.1:

Table-4.1: Number of Out Patients in the sampled DHs

Year	No. of Out Patients in Aizawl CH	Average patients per day	Increase (+)/ Decrease (-) in *per cent*	No. of Out Patients in Champhai DH	Average patients per day	Increase (+)/ Decrease (-) in *per cent*	No. of Out Patients in Lawngtlai DH	Average patients per day	Increase (+)/ Decrease (-) in *per cent*
2014-15	3,88,918	1,227	--	24,857	78	--	17,823	56	--
2015-16	4,11,878	1,299	5.90	22,424	71	(-)9.79	19,589	62	9.91
2016-17	4,16,572	1,314	1.14	21,487	68	(-)4.18	16,978	54	(-)13.31
2017-18	3,88,482	1,225	(-)6.74	27,252	86	26.83	23,640	75	39.24
2018-19	3,94,968	1,246	1.67	31,760	100	16.54	25,951	82	9.78

Source: OPD registers

It can be seen from the table above that there was an overall increase in the number of OPD patients in all the selected hospitals in 2018-19 as compared to 2014-15. The overall percentage increase in out-patients in the sampled DHs over the five-year period from 2014-15 to 2018-19 ranged from was two *per cent* in Aizawl CH, 28 *per cent* in Champhai DH and 46 *per cent* in Lawngtlai DH, though in absolute average number, Aizawl CH saw the maximum increase in OPD patients.

4.1.3 Waiting time

As per Assessor's Guide for Quality Assurance, average time taken for registration would be 3-5 minutes. Accordingly, the number of counters required would be worked out on a scale of 12-20 patients/ hour per counter.

In line with the Assessor's guide, optimal number of average patient loads per day in OPD for the sampled district hospitals was derived based on the number of counter available as given in table-4.2:

Table-4.2: Optimum average patient load in OPD per day

Hospital	Patients/ hour/ counter as per NHM Assessors guide	No. of OPD hour in a week[10]	No of counters	Optimum patient load per week	Optimum patient load per day
(1)	(2)	(3)	(4)	(5)=[(2)*(3)*(4)]	(6)=(5)/6 days
Lawngtlai DH	12-20	22	2	528-880	88-147
Champhai DH	12-20	22	2	528-880	88-147
Aizawl CH	12-20	35	4	1680-2800	280-467

[10] OPD hours in Lawngtlai DH and Champhai DH: Weekdays - 9 AM to 1 PM, Saturday - 9 AM to 11 AM In Civil Hospital, Aizawl, OPD hour is between 9 AM to 3 PM in week days and from 9 AM to 2 PM on Saturday

The ideal average number of patient load per day in the three sampled DHs in OPD is worked out, ranging from 88 to 147 patients in Lawngtlai DH and Champhai DH and 280 to 467 patients in Aizawl CH respectively. In comparison to the average daily patient load handled in the sampled DH (Table-4.1) with the ideal average number of OPD per day, the average patient load per day in Lawngtlai DH and Champhai DH were within/ below the optimum average patient load during the period covered under audit.

Civil Hospital, Aizawl on the other hand, had an average no. of patient ranging from 1,225 to 1,314 patients per day during 2014-19 which was much higher than the optimal average patients per day. This indicates that the number of registration counters needed to be increased in CH Aizawl.

Further, the 'wait time' for registration at the Registration counters and wait time between registration and consultation as per the response of 56 patients during Patient Satisfaction Survey conducted in the test-checked DHs as given in tables-4.3 A & B:

Table-4.3: Waiting time for registration and between registration and consultation with the doctor in the test-checked DHs

A. Wait time for registration

Name of DH	Available No. of registration counters	No. of Patients surveyed	Wait time in minutes		
			1-5	6-30	31-60
Aizawl CH	4	48	23 (48 %)	25 (52 %)	-
Champhai DH	2	5	5 (100 %)	-	-
Lawngtlai DH	2	3	3 (100 %)	-	-
Total		**56**	**31**	**25**	**-**

B. Wait time between registration and consultation with the doctor

Name of DH	No. of Patients surveyed	Wait time ranged (in minutes)			
		1-15	16-30	31-60	60 above
Aizawl CH	48	5 (10 %)	11 (23 %)	15 (32 %)	17 (35 %)
Champhai DH	5	2 (40 %)	3 (60 %)	-	-
Lawngtlai DH	3	1 (33 %)	2 (67 %)	-	-
Total	**56**	**8**	**16**	**15**	**17**

Source: Patient's Satisfaction Survey report of test-checked DH

As can be seen from the Table above:

- In Aizawl CH, out of 48 patients surveyed, 52 *per cent* waited for more than five minutes to get registered at the counters while 67 *per cent* of them waited for more than 30 minutes to consult the doctors;
- In Champhai DH, out of five patients surveyed, all of them could register within five minutes. The wait time between registration and consultation with the doctor in respect of all the patients was within 30 minutes;
- In Lawngtlai DH, out of three patients surveyed, all of them could get registered within five minutes. The wait time between registration and consultation with the doctor in respect of all the patients was within 30 minutes.

Thus, there is scope for further improvement of the waiting time for consultation by adding more registration counters, registration staff and doctors in Aizawl CH.

4.1.4 Other basic facilities in OPD

As per the IPHS norms, OPD facility in a DH should be planned keeping in mind the maximum peak hour patient load and should have scope for future expansion. OPD should have approach from main road with signage visible from a distance. Reception and Enquiry/ May I Help desk should be available and should be manned with competent staff fluent in local language. Services available at the hospital should be displayed at the enquiry. Name and contact details of responsible persons like Medical Superintendent, Hospital Manager, Casualty Medical Officer, Public Information Officer, *etc*. should be displayed. Waiting Spaces/ Waiting area with adequate seating arrangement should be provided. Basic amenities like potable drinking water, functional and clean toilets with running water and flush, Fans/ Coolers, seating arrangement as per load of patient should be available. The clinics should include general, medical, surgical, ophthalmic, ENT[11], dental, obstetrics and gynaecology, post-partum unit, paediatrics, dermatology and venereology, psychiatry, neonatology, orthopaedic and social service department.

It was seen in Audit that:

- The OPD counters in the three sampled DHs were located within the Hospital building and the clinics had proper and adequate waiting area and sitting arrangement for the patients and their attendants coming to the hospital for treatment;
- OPDs had approach from main road with signage visible from a distance;
- Reception and Enquiry/ May I Help desk were available with staff fluent in local language. Services available at the hospital were displayed;
- Name and contact number of responsible persons like Medical superintendent, Causality Medical Officer, Public Information Officer, *etc.* were found to be displayed;
- Basic amenities like potable drinking water, functional and clean toilets with running water and flush were available; and
- OPD clinics like psychiatry, orthopaedic, dermatology and geriatric services were not available in Champhai and Lawngtlai DHs. ENT clinic was also not available in Lawngtlai DH.

Photographs-4.2: OPD waiting areas in sampled DHs

OPD waiting area in Lawngtlai DH

OPD waiting area in Champhai DH

OPD waiting area in Aizawl CH

[11] ENT - Ear Nose Throat

Audit observed that while Aizawl CH was better manned and equipped with the requirements of the OPD services, the OPD of Champhai and Lawngtlai DHs were not fully manned especially in the essential services of Orthopaedics, keeping in view the hilly terrain of the State and the higher probability of orthopaedic cases.

The Department stated (October 2020) that all district hospitals in Mizoram did not follow online registration system due to shortage of manpower and financial constraints which was compounded by poor internet connectivity. They accepted that district hospitals except for Aizawl and Lunglei did not have all the essential services including specialty services like Dermatology, ENT, Ophthalmology, Obs & Gynae, Psychiatry, Orthopaedic, *etc*. due to shortage of specialist doctors in the Department.

Conclusion

None of the three test checked DHs namely Aizawl, Champhai and Lawngtlai had online registration system. All surveyed patients could register at OPD counters in Champhai and Lawngtlai DHs within five minutes while 52 *per cent* of the patients surveyed in Aizawl CH took more than five minutes.

Essential Specialist OPD services such as Orthopaedic and ENT were not available in Lawngtlai DH, while Orthopaedic was not available in Champhai DH. Further, desirable OPD services such as Psychiatry, Geriatric and Dermatology were not available in both Champhai and Lawngtlai DHs.

Recommendations

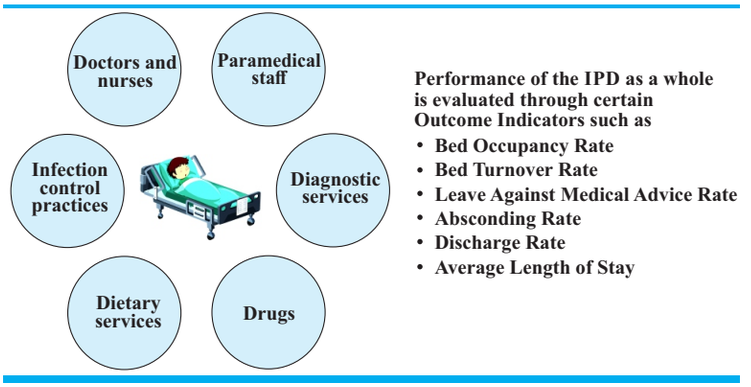
i. The State Government should take steps for implementation of online Registration process and ensure documentation/ computerisation of clinical history of patients for easy retrieval of patient information.

ii. The State Government may ensure availability of basic facilities/ services in the OPD of each district hospitals as per IPHS norms.

4.2 In Patient Department (IPD) Services

IPD refers to the areas of the hospital where patients are accommodated after being admitted, based on doctor's/ specialist's assessment, from the OPD, Emergency Services and Ambulatory Care. In-patients require a higher level of care through nursing services, availability of drugs/ diagnostic facilities, observation by doctors, *etc*.

Chart-4.2: IPD services in the hospital



The number of inpatients that were provided medical care and services in the three test-checked DHs during the period 2014-19 are shown in table-4.4:

Table-4.4: Number of In-patients in three sampled DHs

Year	Census of Inpatients					
	Aizawl CH	Increase (+)/ Decrease (-)	Champhai DH	Increase (+)/ Decrease (-)	Lawngtlai DH	Increase (+)/ Decrease (-)
2014-15	15,874	---	4,349	---	1,771	---
2015-16	15,239	(-) 4.02	4,094	(-) 5.86	2,029	14.57
2016-17	15,343	0.70	3,663	(-) 10.52	1,767	(-) 12.91
2017-18	14,523	(-) 5.34	3,841	4.86	1,456	(-) 17.60
2018-19	13,880	(-) 4.42	4,272	11.22	2,029	39.35

Source: Hospital's records

During the period 2014-15 to 2018-19, there was an overall increase of approximately 15 *per cent* in the number of inpatients in Lawngtlai DH. However, Champhai DH and Aizawl CH witnessed a decrease in number of inpatients of about 1.80 *per cent* and 12.56 *per cent* respectively during the period 2014-15 to 2018-19.

4.2.1 Availability of services in the IPD of the test checked DHs

As per NHM Assessor's Guidebook, a DH should be provided with specialist in-patient (IPD) services related to General Medicine, General Surgery, Ophthalmology, Orthopaedics, *etc.* The availability of inpatient services in the three sampled DHs is given in table-4.5:

Table-4.5: Availability of inpatient services

Sl. No.	Services	Essential/ Desirable (200-300 bed)	Aizawl CH (200-300 bed)	Essential/ Desirable (31-100 bed)	Champhai DH[12] (51-100 bed)	Lawngtlai DH (31-50 bed)
1.	General Medicine	Essential	Yes	Essential	Yes	Yes
2.	General Surgery	Essential	Yes	Essential	Yes	Yes
3.	Obstetrics and Gynaecology	Essential	Yes	Essential	Yes	Yes
4.	Paediatrics	Essential	Yes	Essential	Yes	Yes
5.	Accident and Emergency	Essential	Yes	Essential	Yes	Yes
6.	Ophthalmology (Eye)	Essential	Yes	Essential	Yes	No
7.	Otolaryngology (ENT)	Essential	Yes	Essential	Yes	No
8.	Orthopaedics	Essential	Yes	Essential	No	No
9.	ICU	Essential	Yes	Desirable	No	No
10.	Psychiatry	Essential	No	Desirable	No	No
11.	Geriatric services (10 bedded)	Essential	No	Desirable	No	No
12.	Dermatology and Venereology (Skin and Venereal Disease)	Desirable	No	Desirable	No	No
13.	Dialysis	Desirable	Yes	--	--	--

Source: Records of test-checked DHs

As seen from the table above, it was noticed that in Aizawl CH, out of 11 assured minimum inpatient services, nine inpatient services were available as on date of audit (February

[12] High Dependency Unit and Dialysis Unit were inaugurated on 23rd November 2019 in Champhai DH

2020). Out of eight essential/ assured minimum inpatient services, five and seven essential services were available in Lawngtlai DH and Champhai DH respectively as on date of audit (November 2019 – January 2020).

Further, Sick Newborn Care Unit (SNCU)/ Neonatal Intensive Care Unit (NICU) was available in all sampled DHs. Isolation ward was also available in Lawngtlai DH and Champhai DH. However, essential services like Orthopaedic, Otolaryngology (ENT) and Ophthalmology (Eye) service were not available in Lawngtlai DH, while Orthopaedic services were not available in Champhai DH. Also, Geriatric service which is an essential service for a DH with 200-300 beds was not available in Aizawl CH.

The Department stated (October 2020) essential specialist services in Orthopaedic, ENT and Ophthalmology could not be provided in all the district hospitals due to shortage of specialist doctors in the state. Further, it was stated that geriatric services would be provided in Aizawl Civil Hospital in the near future.

4.2.2 Availability of beds

The number of available bed in the sampled DHs are given in table-4.6:

Table-4.6: Numbers of functional beds available in three DHs

Year	No. of beds		
	Aizawl CH	Champhai DH	Lawngtlai DH
2014-15	300	60	37
2015-16	300	60	37
2016-17	267	60	37
2017-18	266	75	34
2018-19	269	75	34

Source: Records of test-checked DHs

As per IPHS norms, the number of beds required for a district having a population of 10 lakh is around 300 beds. The Department had not prescribed any norms/ criteria for the creation of a DH and hospital beds to deliver secondary level of quality assured services.

The number of beds required for the sampled DHs *vis-à-vis* size of the population of the districts are derived on the basis of the norms of IPHS[13] is given in table-4.7:

Table-4.7: Number of beds required for the sampled DHs *vis-à-vis* size of the population

District Hospital	Population (census 2011) (in lakh)	No. of beds available (As on March 2019)	No. of beds required (IPHS)		Surplus (in *per cent*)	
			At 100 *per cent* occupancy	At 80 *per cent* occupancy	At 100 *per cent* occupancy	At 80 *per cent* occupancy
Aizawl CH	4.00	269	110	88	145	206
Champhai DH	1.26	75	34	28	121	168
Lawngtlai DH	1.18	34	32	26	6	31

Source: Records of test-checked DHs

As seen from above, the number of available beds is above the IPHS norms in all three DHs.

[13] Annual rate of admission as one per 50 population and average length of stay in a hospital as five days

4.2.3 Availability of medical staff in IPDs

As per Checklist 11 of National Quality Assurance Standard (NQAS), nursing services should be available in the hospital 24 x7, medical officers must be available at all times in the hospital and specialist doctors should be available on-call.

It was noticed in audit that Nursing staff were available at all times in the three sampled DHs for the period cover under audit.

In Aizawl CH, separate designated staff (eight Medical Officers and four Nursing Staff) were available 24 x 7 for emergency and casualty department (February 2020). For other departments, on-call duty roster for medical officers were prepared on a monthly basis.

Lawngtlai and Champhai DHs followed 24 x7 on-call systems for medical officers for casualty and emergency ward on a weekly basis. There were no separate designated staff for casualty and emergency department in both the DHs. Patients requiring medical attention outside of OPD timing in other wards were attended by medical officer on-call in casualty and emergency ward.

The Department stated (October 2020) that a separate staff for emergency and casualty department could not be designated due to shortage of manpower in all the DHs. During Exit Conference (11 December 2020), it was stated that non-availability of doctors' quarters in the vicinity of the Aizawl Civil Hospital created problem such as late arrival of doctors on call during emergency.

4.3 Intensive Care Unit Services

The IPH Standards envisage that DHs should have an Intensive Care Unit (ICU) to attend to critically ill patients such as major medical and surgical cases, head injuries, severe haemorrhage, *etc.* requiring highly skilled life saving medical aid and nursing care. The IPH Standards further provide that the number of beds in the ICU may be restricted initially to five *per cent* of the total bed capacity of the hospital and gradually expanded to 10 *per cent*. Life saving equipment such as High End Monitor (HEM), Ventilator, Thrombosis Prevention Device (TPD), Oxygen therapy for each bed and common Ultrasound (USG) and Defibrillator which are essential to save critical patient should be available.

It was seen in Audit that Out of the three selected DHs, Lawngtlai DH and Champhai DH did not have ICU facility[14] (February 2020). Aizawl CH, a 269 bedded hospital requiring 13 beds in ICU as per IPHS had (February 2020) only five beds ICU with the average bed occupancy rate of 83.82 *per cent* during the last five years (2014-19). Essential ICU equipments like Ultrasound Machine, Deep Vein Thrombosis prevention devices suction[15], O_2 therapy devices were not available in Aizawl CH. Although, the ICU had physical barrier free access facility like ramp and lift for people with disabilities and for easy, safe and fast transport of bed/ trolley of critically sick patient; yet, the only lift

[14] ICU facility is desirable for DH below 100 beds

[15] The device is used to cuffs around the legs that fill with air and squeeze legs to increases blood flow through the veins of legs and helps prevent blood clots

facility available at the hospital near ICU was not operational since the last eight years.

Out-of-order lift at Aizawl CH

The Department stated (October 2020) that ICU at Aizawl CH was being upgraded for which civil works have been completed and essential equipment supply order was issued on 20 March 2020. Most of the items have already been procured including 19 ICU beds. Oxygen gas pipe under NESIDS[16] was being taken up and expected to be completed during the current financial year 2020-21. Further, five-bedded ICU under Trauma Care Facility Project are being planned for all the district hospitals except Mamit [IPD with ICU being built under Corporate Social Responsibility (CSR)] which are on the verge of completion. This will minimise the problem of long distance travel by critically ill patients.

4.4 Operation Theatre (OT) Services

Operation Theatre (OT) is an essential service within a hospital where surgical operations are carried out in an aseptic environment.

As per IPHS guidelines, OTs required for a hospital depending on the number of beds for various services are as shown in table-4.8:

Table-4.8: Availability of OT services

Name of DH	No. of beds as per norms	General OT	Availability	Emergency OT	Availability	Ophthalmology/ ENT OT	Availability
Aizawl CH	200-300	2	Available	1	Not available	1	Available
Champhai DH	51-100	1	Available	1	Not available	1	Available
Lawngtlai DH	31-50	--	Available	1	Not available	--	--

Source: Records of test-checked DHs

It was noticed in Audit that against the requirement of two General Surgery OTs, one Emergency OT and one Ophthalmology/ ENT OT, Aizawl CH has two General Surgery OTs and one ENT/ Ophthalmology (Eye) OT. Moreover, Aizawl CH has separate OTs for Gynaecology and Obstetrics, Orthopaedic, ENT and Ophthalmology (Eye). Against the requirement of one General Surgery OT and one Emergency, Champhai DH has one General Surgery OT. Separate Eye OT is also available in Champhai DH and against the requirement of one Emergency OT, Lawngtlai DH has one General Surgery OT. Minor OT is also available in Lawngtlai DH.

4.4.1 Documentation of OT procedures

NHM Assessor's Guidebook prescribes that surgical safety checklist, pre-surgery evaluation records and post-operative evaluation records for OTs should be prepared for each case.

[16] North East Special Infrastructure Development Scheme

Surgical Safety checklists are prepared in order to decrease errors and adverse events and increase teamwork and communication in surgery. The purpose of Pre surgery evaluation is to evaluate and, if necessary, implement measures to prepare higher risk patients for surgery. Post-operative evaluation notes record the care given during the immediate post operative period, both in the operating room and post anaesthesia care unit as well during the days following the surgery. The impact on patient outcomes depends on the effectiveness of hospital's implementation processes of these checklists.

The ratio of number of surgeries performed and surgical safety checklist noticed in the test-checked DHs during 2014-19 is detailed in table-4.9:

Table-4.9: Ratio of surgeries with safety checklist of OT procedures

Sl. No.	Parameter	Year	Aizawl CH	Champhai DH	Lawngtlai DH
1.	Ratio of safety checklist record per total surgeries performed at the OT	2014-15	Checklist not prepared	Checklist not prepared	Checklist not prepared
		2015-16			
		2016-17			
		2017-18			
		2018-19	1:1.3		1:41.3
2.	Ratio of pre-surgery patient evaluation records per total surgeries performed at the OT	2014-15	1:1.5	Records not furnished	Checklist not prepared
		2015-16	1:1.4		
		2016-17	1:1.6		
		2017-18	1:1.5		
		2018-19	1:1.5		1:41.3
3.	Ratio of post-operative notes records per total surgeries performed at the OT	2014-15	1:1.5	Records not furnished	Checklist not prepared
		2015-16	1:1.4		
		2016-17	1:1.6		1:10.3
		2017-18	1:1.5		1:3.9
		2018-19	1:1.5		1:5.2

Sources: Records of test-checked DHs

It can be seen from the above table Lawngtlai DH and Aizawl CH had ensured surgical safety checklist only from 2018-19 whereas Champhai DH had not maintained the same during the whole audit period. Pre-surgery patient evaluation records and Post-operative notes were maintained in Lawngtlai DH *w.e.f.* 2018-19 and 2016-17 respectively.

The Department stated (October 2020) that necessary instructions would be issued to all the district hospitals to maintain relevant checklist of OT procedures as prescribed in NHM Assessor's Guidebook. During Exit Conference (11 December 2020) the department assured that the issue would be verified from the district hospitals and intimated to audit.

4.5 Emergency Services

As per IPHS, 24 x 7 operational emergency with dedicated emergency room shall be available with adequate manpower. It should preferably have a distinct entry independent of OPD main entry so that a very minimum time is lost in giving immediate treatment to patients arriving in the hospital in emergent circumstances. All the selected DHs provided 24 x 7 emergency services having a distinct entry independent of OPD main entry.

It was observed that separate trauma care facility was not available in the sampled DHs (November 2019-February 2020) either due to lack of manpower or infrastructure. National Institute of Health and Family Welfare, Ministry of Health and Family Welfare, GoI made recommendations (July 2019) based on the external evaluation (November-December 2017) of Aizawl CH for constitution of a Co-ordination Committee under the Medical Superintendent of the Hospital in order to:

(i) Monitor and ensure proper functioning of trauma care facility; and

(ii) Purchase equipment and process separate recruitment of staff for trauma care facility.

In this regard, co-ordination committees for establishment of Trauma Care Facility were constituted (October 2019) in the sampled DHs. Further, Trauma Care facilities were under construction[17] in Champhai DH and Lawngtlai DH as of March 2019 (Construction commenced in June 2018 and December 2018 respectively). However, construction of Trauma Care Facility was yet to commence in Aizawl CH as of March 2020.

It was noticed in audit that trauma cases involving grievous injuries, patients of serious road traffic accidents, complicacies, *etc*. were referred to either Lunglei DH or Aizawl CH. There were 33 and 25 referral cases of trauma from Lawngtlai DH and Champhai DH respectively during 2014-19.

Audit observed that there was a high health risk in transporting patients needing trauma care from the far-flung districts like Champhai and Lawngtlai to either Aizawl or Lunglei, which have better facilities. Due to the connectivity problems and journey time which is around eight hours from Champhai to Aizawl, patients would be at high risk due to referrals to places which were far from their DHs.

The Department stated (October 2020) that Trauma Care facilities were being taken up in seven districts except Mamit. Construction works were on the verge of completion except in Aizawl Civil Hospital. Procurement of equipment had also been done. Completion of these projects was expected to minimise the necessity of transporting patients needing trauma care from far-flung districts.

The Director, Hospital and Medical Education (DHME) stated (February 2021) that the construction of Trauma Care Centre at Lawngtlai District Hospital has been completed while 65 *per cent* has been completed at Champhai District Hospital. Though work order (₹ 5.70 crore) was issued (September 2018 and April 2019) for construction of Trauma Care Centre at Aizawl Civil Hospital, there were delays in commencement of works due to land disputes and permission not received from the Aizawl Municipal Corporation (February 2021). The Department had not monitored the timely completion of the Centre.

[17] Construction of Trauma Care facilities in Champhai and Lawngtlai DHs were commenced in June 2018 and December 2018 respectively

4.6 Laboratory and Diagnostics Services

IPHS norms envisage that each DH laboratory should be able to perform all tests required to diagnose epidemics or important diseases from the view point of public health. The availability of diagnostic services in the three sampled DHs is given in table-4.10:

Table-4.10: Availability of diagnostic services in the test checked DHs

Sl. No.	Diagnostic Services	Availability in		
		Aizawl CH	Champhai DH	Lawngtlai DH
1.	Clinical Pathology	Yes	Yes	Yes
2.	Pathology	Yes	Yes	Yes
3.	Microbiology	Yes	No	No
4.	Serology	Yes	Yes	Yes
5.	Blood Bank	Yes	Yes	Yes
6.	Biochemistry	Yes	Yes	Yes
7.	Cardiac Investigations	Yes	Yes	Yes
8.	Ophthalmology	Yes	Yes	Yes
9.	ENT	Yes	No	No
10.	Radiology	Yes	Yes	Yes
11.	Endoscopy (laparoscopy)	Yes	No	No
12.	Respiratory (PFT)	Yes	No	No
13.	Others	Thyroid FT	--	Colposcopy, Colonoscopy

Sources: Records of test-checked DHs

Table above shows the diagnostic services *viz*., ENT and Endoscopy (laparoscopy) and Microbiology were not available in Lawngtlai and Champhai DHs. The laboratories in both DHs were run from a single room and did not have separate rooms for biochemistry, microbiology and pathology services. Lawngtlai and Aizawl DHs had Standard Operating Procedure (SOP) for laboratory and diagnostic services. Laboratory registers were maintained where results of diagnostic test were recorded. However, turnaround time for diagnostic test was not maintained in the three DHs.

Further, the status of availability of cancer diagnostic and linkage services in the test checked DHs are given in table-4.11:

Table-4.11: Services and linkages available for cancer treatment in the sampled DHs

Hospital	Services available in DH	Linkage to nearest tertiary centres/ medical colleges for referral services
Aizawl CH	Diagnostic procedures such as Histopathology, Immuno-histochemistry, Cytopathology including FNAC, Blood fluid analysis	1. Mizoram State Cancer Institute, Zemabawk, Aizawl for chemotherapy and Radiotherapy 2. Dr. Bhubaneswar Borooah Cancer Institute (BBCI), Guwahati for treatment and diagnosis 3. Apollo Gleneagles, Hospital, Kolkata for treatment and diagnosis 4. TATA Medical Centre, Kolkata for treatment and diagnosis 5. AMRI Hospital, Kolkata for treatment and diagnosis
Champhai DH	FNAC, Endoscopy and Ultrasonography	Linked with Aizawl CH
Lawngtlai DH	No diagnostic facility available in the Hospital	Linked with Aizawl CH

Source: Records of DHs

It was noticed that none of the test checked DHs maintained data on cancer such as number and type of cancer cases detected/ diagnosed in the DHs, number of cancer patient referred to specialised health care facilities, *etc*.

Further, it was noticed that Lawngtlai DH did not have diagnostic facilities while Champhai DH did not have biopsy facilities for detection of cancer.

Thus, it was seen that the DHs especially Champhai and Lawngtlai were ill-equipped for diagnosis of cancer and thus the cases had to be referred to a facility of a higher centre.

The Department stated (October 2020) that all essential laboratories and diagnostics services could not be run due to shortage of specialists and space constraints.

4.7 Citizens' Charter and Grievance Redressal Systems

IPHS envisages that each DH should display prominently a citizens' charter for the DH indicating the services available and a grievance redressal system should be established. Citizens' Charter always should be in local language.

It was seen in Audit that citizens' charters was found to be displayed, in easy to understand, local language in all the three sampled DHs. Further, complaint/ suggestion boxes were available in all the three DHs. However, Grievance redressal cell was not formed till date of audit (January, 2020) in the Lawngtlai DH. There was no records of remedial measures taken against the complaints/ grievances received in Champhai and Lawngtlai DHs. The Grievance redressal cell/ complaint cell Committee of Aizawl CH met thrice (August 2017, March 2018 and June 2018) to attend to various complaints in the year 2017 and 2018.

During Exit Conference (11 December 2020) the department stated that meeting of the Grievance redressal cell/ Complaint Cell Committee could not be convened regularly due to paucity of time. However, complaints were addressed and discussed during various other sub-committee meetings.

4.8 Patient Safety

NHM Assessor's Guidebook envisages that in each DH, a disaster management committee should be constituted. The Disaster Management Plan (DMP) was to be developed in the hospital for ensuring preparedness of the hospital staff in the event of disaster through training and conduct of periodic mock drills in the hospitals.

It was seen in Audit that except for Aizawl CH, DMP was not prepared by the other two sampled District Hospitals. Further, no records were found as to the conduct of training and mock drills in any of the three hospitals for fire and other disaster situations during the period covered under audit.

Thus, there was lack of preparedness for any disaster event in the three sampled DHs. It posed high safety risk especially to the seriously ill patients in the events of earthquake, in view of the State being in the high earthquake prone zone.

The Department stated (October 2020) that due to non-availability of funds, improvements on preparedness for any disaster event beyond the present status cannot be achieved.

The Department's reply is not tenable in view of the overall savings in their budgetary allocation every year as mentioned in detail in paragraph 2.1.1.

Conclusion

SNCU/ NICU were available in all the test checked DHs. However, two (Psychiatry and Geriatric) out of 11 essential in-patient services was not available in Aizawl Civil Hospital while one (Orthopaedics) out of eight essential in-patient services was not available in Champhai DH. Three (Ophthalmology, ENT and Orthopaedics) out of eight essential in-patient services were not available in Lawngtlai DH.

Trauma Care facilities were not yet operational in all the test checked DHs. Essential diagnostic services such as Microbiology, ENT and Endoscopy were not available in two (Champhai and Lawngtlai DHs) out of three test checked DHs. Turnaround time for diagnostic tests was not maintained in all the test checked DHs. DHs Champhai and Lawngtlai were ill equipped for concerned diagnosis requiring referrals.

DHs were not prepared for disaster management. Grievance Redressal system was not fully operational in DHs.

Recommendations

i. *Government may proactively synergise availability of specialised in-patient services along with the essential drugs, equipments and human resources in district hospitals.*

ii. *The availability of round the clock doctors and nurses in DHs needs to be ensured.*

iii. *The quality of diagnostic services which are crucial for patient care and treatment be made comprehensive as per requirements. The State Government/ hospital administration must ensure availability of all essential diagnostic services and equipment and improve turnaround time for diagnostic tests.*

iv. *All DHs be equipped with diagnostic tests for cancer detection.*

v. *The Hospital administration may also ensure adequate documentation of availability of safety measures for verification.*

vi. *Adequate grievance redressal mechanism may be operationalised so that hospitals improve performance by tailoring interventions effectively to address the issues related to patient satisfaction.*

vii. *The Department may review disaster preparedness in all DHs and take remedial steps in coordination with State disaster management authorities.*

CHAPTER-5

SUPPORT SERVICES

Chapter - 5: Support Services

Whether support services like drug storage, sterilisation, hygiene, waste management, infection control, ambulance, power back-up/ UPS, etc. had aided the line departments in providing a safe and sterile environment

5.1 Storage of Drugs

As per Indian Public Health Standards (IPHS), Hospitals shall have standard operating procedure for stocking, preventing stock out of essential drugs, receiving, inspecting, storage and retrieval of drugs, checking quality of drugs, inventory management, storage of narcotic drugs, date of expiry, *etc*. In addition, the room temperature of the drug store should be below 30 degrees Celsius to maintain the efficacy and shelf life of the medicines.

It was seen in Audit that in all the sampled DHs except for Aizawl CH designated area for storing psychotropic, narcotics and concentrated solutions were not available. Similarly, there was no system in place in the indoor pharmacy for recalling expired medicines from "patient care areas" in the sampled DHs except for Aizawl CH. As such, safe environment was not ensured in all DHs.

The Department stated (October 2020) that the District Hospitals stored medicines where store room temperature was maintained at optimum temperature with ceiling fan during summer. There was no need to control the room temperature during winter and rainy season. Psychiatric concentrated solutions are kept according to the space available at the District Hospitals. However, the District Hospitals would be instructed to store them in a safe environment. The Department also stated that drugs procured by Central Medical Store were being screened regularly by Vigilance Committee chaired by Joint Secretary, Health & Family Welfare.

5.2 Dietary Service

IPHS norms envisage dietary service of a hospital as an important therapeutic tool. Apart from normal diet, diabetic diet, semi-solid diets, liquid diet shall be available based on patients' requirements.

It was seen in Audit that-

- Diets were provided in all the sampled DHs at the rate of ₹ 80 per head per day as fixed by the DH&ME, GoM (21 May 2014);
- Dietician was not available in Champhai and Lawngtlai DHs. As dietician was not available in the two DHs there was no system of diet counselling, formulation of calorie requirement and setting of the patients' diet accordingly;
- Dietician was available and system of diet counselling by the dietician was also available in the Aizawl CH. However, Audit observed that the advices/ recommendations of the dietician were not communicated to the kitchen-in-charge of the hospital which implied that the advices/ recommendations were not taken into account in the preparation of food for indoor patients; and

- The Janani-Shishu Suraksha Karyakram Guidelines envisaged that, care of the mother and baby (including immunisation) are essential immediately after delivery and at least up to 48 hours. During this period, mother is guided for initiating breast feeding and advised for extra calories, fluids and adequate rest which are needed for well-being of the baby and herself. It was noticed that separate diet register related to maternal women was not maintained in all the three sampled DHs. Moreover, records regarding advices for extra calories, fluids and adequate rest for maternal women were also not available.

Audit observed that the objective of providing diets based on patients' requirement was not fulfilled as similar diets were provided to maternal women as any other indoor patients as per the existing rate stated above.

The department stated (October 2020) that it was not possible to provide different varieties of diet for indoor and maternal ward patients at the current rate of ₹ 80 per patient per day. The issue is expected to be alleviated with the implementation of the revised rate of ₹ 120 per patient per day issued (October 2020) by the State Government. It was also stated that the district hospitals would engage Hospital dietician for special diets.

5.3 Infection Control

IPHS norms provide that each hospital should constitute an infection control team and develop SOP for septic procedures, culture surveillance and determination of hospital-acquired infections. Apart from safe injection administration practices, general cleanliness and adoption of hygienic practices are important tools in the prevention of infection.

It was seen in Audit that-

- Hospital infections control committee (HICC) was set up in all the three DHs and SOP for infection control management was also available with them;
- There was no system to monitor and measure hospital associated infection rates in all the sampled DHs. As such, the number of hospital associated infection rates could not be ascertained; and
- While hospital sterility test was conducted in all the sampled DHs, Air sampling was not found to be carried out in Lawngtlai and Aizawl DHs and fumigation was not found to have been done in Aizawl CH.

The Department stated (October 2020) that Air sampling is a sophisticated procedure requiring expert personnel and specific equipment which cannot be done in the district hospitals. There is a well-defined system to monitor and measure hospital acquired infections in the district hospitals. Every ward follows basic infection prevention practices and also document and record any infection occurring in their premises since October 2020. Corrective measures are taken as and when necessary. However, relevant supporting records were not available for verification.

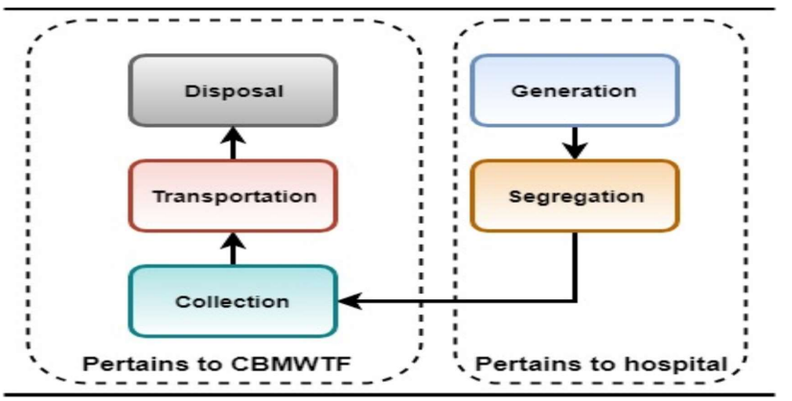
5.4 Hospital Waste Management

Hospital waste management, also known as medical waste management, is a system that handles hospital-generated waste, including infectious, chemical, expired pharmaceutical and radioactive items and sharps.

5.4.1 Bio-medical waste management

Bio-medical waste (BMW)/ hospital waste is any kind of waste containing infectious or potentially infectious materials. The BMW management is an integral part of infection control activities of the hospital. The GoI framed Bio-Medical Waste (Management and Handling) Rules, 1998 under Environment (Protection) Act, 1986, which was superseded by Bio-Medical Waste Management Rules, 2016. The Rules, *inter alia*, stipulate the procedures for collection, handling, transportation, disposal and monitoring of the bio-medical waste with clear roles for waste generators and Common Bio-Medical Waste Treatment Facility (CBMWTF) as shown in the chart below:

Chart-5.1 : Procedures for collection, handling, transportation, disposal and monitoring of BMW



Further, as per Rule 8(7) of Bio-Medical Waste Management Rules, 2016, untreated human anatomical waste, animal anatomical waste, soiled waste and biotechnological waste shall not be stored beyond a period of 48 hours. It shall be ensured that the total time taken from generation of bio-medical waste to its treatment, which also includes collection and transportation time, shall not exceed 48 hours.

It was observed that biomedical waste incinerator plant meant for three hospitals, including Aizawl CH was installed at State referral hospital (SRH), Falkawn. However, at the time of spot verification (March 2020), it was found that the incinerator had broken down and Bio-medical wastes, mainly untreated human anatomical waste or infectious waste from Aizawl CH were burnt in a temporary concrete open furnace behind the incinerator plant which is hazardous to public health as it can create


Temporary concrete open furnace at SRH, Falkawn
2020-3-4 11:07

more air pollution as shown in the photograph placed alongside. Sharp pit and effluent treatment plant were, however, available in the Aizawl CH.

It was observed in Champhai DH that incinerator, sharp pit and effluent treatment plant were available. However, BMW was collected and disposed of once a week (Tuesday) in the DH which in addition to being violation of Rule 8(7) of Bio-Medical Waste Management Rules, 2016 also posed infection risk to the health care workers, patients and visitors of the DH.

It was observed in Lawngtlai DH that Sharp pit and effluent treatment plant were available. However, incinerator plant installation which was started in June 2017 was not completed till date (May 2020). Due to this, deep burial method was being resorted to for disposal of untreated human anatomical waste or infectious waste.

The Department stated that due to space constraint, incinerator at State Referral Hospital, Falkawn is being utilised for the purpose. It was stated that District Medical Superintendent, Champhai District Hospital was informed verbally to run the incinerator at least twice a week. It was further stated that the installation of incinerator at Lawngtlai District Hospital was completed, but commissioning was delayed due to Covid-19 pandemic.

5.5 Linen and Laundry Services

A proper service of linen and laundry is a recognised support service which not only ensures prevention and containment of hospital infection but also contributes to value addition to the image of the hospital in the eyes of public. Clean linen instils psychological confidence in the patients and the public and enhances their faith in the services rendered by the hospital. Simultaneously, an efficient linen and laundry service is of advantage for hospital marketing and speaks of ability of the medical care services.

The IPHS norms prescribe the number of different types of linen that are required for patient care services for hospitals. The availability of different prescribed linen in each test-checked DHs is as given in table-5.1:

Table-5.1: Availability of linens in sample DHs

Name of the Equipment	Aizawl CH (201-300 Bedded)			Champhai DH (51-100 Bedded)			Lawngtlai DH (31-50 Bedded)		
	R	A	in *per cent*	R	A	in *per cent*	R	A	in *per cent*
Bed sheets	1,200	751	63	400	318	80	200	125	63
Bedspreads	1,800	707	39	600	0	0	300	90	30
Blankets (Red & blue)	100	226	226	30	100	333	20	35	175
Towels	1,000	171	17	150	30	20	100	14	14
Table cloth	75	1	1	50	0	0	30	0	0
Draw sheet	150	375	250	75	242	323	30	23	77
Doctor's overcoat	90	134	149	30	15	50	20	28	140
Hospital worker OT coat	400	110	28	200	20	10	25	18	72
Patients house coat (female)	900	114	13	300	30	10	150	23	15
Patients Pyjama (male) Shirt	400	468	117	200	30	15	100	21	21
Pillows	450	464	103	150	85	57	60	48	80
Pillows covers	900	698	78	300	210	70	150	55	37
Mattress (foam) Adult	300	226	75	100	146	146	50	30	60
Paediatric Mattress	40	24	60	16	0	0	6	0	0
Abdominal sheets for OT	200	89	45	50	6	12	30	42	140
Pereneal sheets for OT	200	0	0	50	30	60	30	48	160

Name of the Equipment	Aizawl CH (201-300 Bedded)			Champhai DH (51-100 Bedded)			Lawngtlai DH (31-50 Bedded)		
	R	A	in *per cent*	R	A	in *per cent*	R	A	in *per cent*
Leggings	150	0	0	80	0	0	20	10	50
Mortuary sheet	70	0	0	30	0	0	10	0	0
Mats (Nylon)	200	0	0	50	0	0	30	36	120
Mackin-tosh sheet (meters)	300	30	10	150	80	53	100	29.3	29

Sources: records of test-checked DHs, R= Required, A= Available

From the table above, it can be seen that:

- None of the sampled DHs had all the types of prescribed linen. Out of 20 types of linen, there was shortage of six types in Champhai DH, four types in Aizawl CH and three types in Lawngtlai DH; and
- Even the available linens (except few, which were adequately available) were comprehensively less *vis-à-vis* the required quantity. The shortfall of the available linen in term of quantity ranged from one to 78 *per cent* in respect of Aizawl CH, 10 to 80 *per cent* in respect of Champhai DH and 14 to 80 *per cent* in respect of Lawngtlai DH.

Further, as per IPHS, Linen should be provided with necessary facilities for drying, pressing and storage of soiled and cleaned linens which may be outsourced by the DHs.

It was seen in all the sampled DHs that laundry services were outsourced to private parties to ensure uninterrupted supply of clean linen for patients. Infected and blood stained linens especially in respects of Operation Theatre were sterilized in-house using Autoclave in all the sampled DHs. In addition, Sodium hypo-chloride solution was also used for disinfecting the infected and fouled linen.

The Department stated (October 2020) that Linen and Clothing were procured for all the DHs as per recommendation of Hospital Administrative Committee. However, the requirement of set of six per bed could not be achieved due to paucity of funds.

5.6 Ambulance Service

IPHS stipulated that DHs should have well equipped Basic Life support (BLS) and desirably one Advanced Life Support (ALS) ambulances. These ambulances should be equipped with patients' bed, first-aid kit, essential medical equipment, should be fitted with Global Positioning System (GPS) and linked with one toll free number like 102/ 108 as required under National Ambulance Service (NAS) Guidelines so that patients may contact in their hour of need. Further, under the JSSK scheme, pregnant women are entitled to free transport facility to and from home to the facility and to higher facility in case they are referred further.

As per IPHS, every DH should have ambulance services with basic life support under its essential service. Further, as per the number of availability of bed in the DH, IPHS prescribed required number of ambulances.

It was seen in Champhai DH that two ambulances were available. However, out of two, one Ambulance was out of service at the time of spot inspection (December 2019). The matter

had not yet been reported to the higher authority. It was stated that the said ambulance was still being used as pool vehicle to collect indented materials within the town area though not being used as ambulance. Further, the in-service Ambulance, which was being used for referral cases to higher hospitals, was equipped with oxygen support and first aid box as basic life support.

In Lawngtlai DH, one ambulance was available however, except for First Aid Box, no other basic life support equipment was available inside the lone ambulance being used for referral cases to higher hospitals as depicted in the photograph placed alongside.

Ambulance at Lawngtlai DH

In Aizawl CH, eight ambulances were available against the normative requirement of three ambulances. These included two NAS ambulances, two ambulances meant for the Governor and the Chief Minister of Mizoram and four other ambulances which were being utilised for medical emergencies on hiring basis. It was also seen that oxygen support system was not available in three ambulances out of eight ambulances available in the Aizawl CH.

The Department stated (October 2020) that while the State did not have approved norms for ambulance service, IPHS norms could not be followed strictly. Some of the ambulances were quite old and required repeated repair works. Further, some ambulances needed to be equipped with the requirements for Advance Life Support (ALS) and Basic Life Support (BLS) which was currently not possible due to fund constraints. During exit meeting (11 December 2020) the department also stated that updated status on ambulances would be furnished to audit.

Conclusion

The prevailing system of storage of drugs in the test-checked hospitals was not conducive for orderly storage and as per norms/ parameters making the drugs susceptible to damage, contamination and theft. Dietician Services were not available in Champhai and Lawngtlai DHs, whereas the recommendations of the available dietician at CH Aizawl were not found implemented. Separate diet registers/ records for extra nutrition to be provided to women as part of maternal care services, were not found implemented in all DHs. Infection control was found implemented as per requirements and monitoring committees were in place in sampled DHs. Incinerator was yet to be made operational in Lawngtlai DH. None of the sampled DHs had all the types of prescribed linen.

Shortages in types of linen were seen in Champhai DH (six), Aizawl CH (four) and Lawngtlai DH (three), whereas the shortfall of the available linen in terms of quantity

ranged from one to 78 *per cent* in respect of Aizawl CH, 10 to 80 *per cent* in respect of Champhai DH and 14 to 80 *per cent* in respect of Lawngtlai DH. Ambulance services were not available satisfactorily in all DHs and were also not found equipped with essential equipment.

Recommendations

i. *The system of storage of drugs needs to be strengthened so as to ensure their orderly storage as per norms/ parameters.*

ii. *The BMW Rules should be adhered to and followed rigorously to provide an infection free environment in the hospital.*

iii. *The department may ensure availability of all types of prescribed linen in all the DHs.*

CHAPTER-6

MATERNAL AND CHILD CARE, CANCER AND HIV/ AIDS CARE

Chapter - 6: Maternal and Child Care, Cancer and HIV/ AIDS Care

Adequacy of healthcare services relating to maternal and infant care

6.1 Maternal and Child Health

Maternal health refers to the health of women during pregnancy, childbirth and the postpartum period, whereas prenatal health refers to health from 22 completed weeks of gestation until seven completed days after birth. New born health is the babies' first month of life. A healthy start during the prenatal period influences infancy, childhood and adulthood[18].

6.1.1 MMR and IMR (State Level)

Maternal Mortality Rate (MMR) and Infant Mortality Rate (IMR) are important indicators of the quality of maternal and child care services available and is one of the most sensitive index of quality of maternal and new born care. The goal set forth by the State Government in its State Programme Implementation Plan 2014-17 was to reduce MMR from 76 (2013) to less than 60 by 2017 and to reduce IMR from 35 (2013) to less than 30 by 2017.

Trends of Maternal Mortality Rate and Infant Mortality Rate in Mizoram for the period 2014-19 are given in table-6.1:

Table-6.1: Trends of MMR and IMR of Mizoram during 2014-19

Year	No. of reported live births	No. of reported maternal death	No. of reported infant death	MMR (of one lakh live births)	IMR (of 1,000 live births)
2014-15	21,819	19	821	87	38
2015-16	19,945	21	449	105	23
2016-17	19,251	20	398	103	21
2017-18	19,393	19	390	98	20
2018-19	19,289	26	340	135	18

Source: HMIS data of Mizoram

From the table above, it can be seen that MMR of the State showed a fluctuating trend during 2014-19 with the MMR increasing to 135 in 2018-19 from 87 in 2014-15. The State Government has not been able to achieve the target for reduction of MMR and the steep jump in 2018-19 merits appropriate policy and programme interventions. The State Government attributed the increase in MMR to four main factors namely, poor health behaviour, late Absolute Neutrophil Count (ANC) check-ups, floating population in international border areas and difficult terrain and poor connectivity especially in monsoons.

IMR showed a decreasing trend and had come down from 38 per 1,000 live births in 2014-15 to 18 per 1,000 live births in 2018-19. The State Government was able to reduce IMR much lower than the target.

[18] According to World Health Organisation (WHO)

6.1.2 MMR and IMR in test checked DHs

Audit of three sampled DHs was taken up to assess the condition of Maternal and Child care services. Being the secondary level Health facility, it is imperative for DH to have facility tending to complicated cases as well as referral cases. The trends of MMR and IMR of test checked three sampled DHs during 2014-19 are given in table-6.2:

Table-6.2: Trends of MMR and IMR test checked three sampled DHs during 2014-19

Year	Aizawl CH			Champhai DH*			Lawngtlai DH		
	No. of live births including CS**	No. of infant death (IMR in parenthesis)	No. of Maternal Death (MMR in parenthesis)	No. of live births including CS	No. of infant death (IMR in parenthesis)	No. of Maternal Death (MMR in parenthesis)	No. of live births including CS	No. of infant death (IMR in parenthesis)	No. of Maternal Death (MMR in parenthesis)
2014-15	5,837	165 (28.27)	2 (34.26)	894	19 (21.25)	0 (0.00)	315	22 (69.84)	0 (0.00)
2015-16	5,412	107 (19.77)	2 (36.95)	898	18 (20.04)	1 (111.36)	437	17 (38.90)	0 (0.00)
2016-17	5,270	114 (21.63)	6 (113.85)	736	7 (9.51)	0 (0.00)	326	14 (42.94)	2 (613.50)
2017-18	5,284	85 (16.09)	1 (18.93)	782	19 (24.30)	1 (127.88)	466	7 (15.02)	0 (0.00)
2018-19	5,067	84 (16.58)	3(59.21)	837	13 (15.53)	1 (119.47)	458	6 (13.10)	2 (436.68)
Total	**26,870**	**555**	**14**	**4,147**	**76**	**3**	**2,002**	**66**	**4**

Source: Records of test checked DHs

** Data in respect of Maternal deaths in Champhai DH are available from January 2015 only*

*** Cesarean section*

It can be seen from table above that:

- All the sampled DHs showed a declining IMR trend during 2014-15 to 2018-19. In 2018-19, IMR in all the sampled DHs were lower than the State's IMR of 18 per 1,000 live births; and
- Champhai achieved zero MMR in 2014-15 and 2016-17 while Lawngtlai DH achieved zero MMR in 2014-15, 2015-16 and 2017-18.

6.1.3 Pregnancy outcomes

With a view to gauge the quality of maternity care provided by the hospitals, Audit test-checked the pregnancy outcomes in terms of live births, stillbirths and neonatal deaths pertaining to 2014-19, as discussed below:

Stillbirth or intrauterine foetal death is an unfavourable pregnancy outcome and is defined as complete expulsion or extraction of baby from its mother where the foetus does not breathe or show any evidence of life, such as heartbeat or a cry or movement of the limbs[19]. World Health Organisation defines Stillbirth for international comparison as a baby born with absolutely no signs of life at or after 28 weeks of gestation. The stillbirth rate is a key indicator of quality of care during pregnancy and childbirth.

It was seen in Audit that stillbirth rate of three test-checked DHs during 2014-19 ranged between 0.81 and 1.43 *per cent* as given in table-6.3:

[19] As per operational guidelines for establishing sentinel stillbirth surveillance system 2016 (MH&FW, GoI)

Table-6.3: District Hospital wise Stillbirths during 2014-19

Year	Aizawl CH			Champhai DH			Lawngtlai DH		
	Total Deliveries	No. of Live births (*per cent*)	No. of Still Births (*per cent*)	Total Deliveries	No. of Live births (*per cent*)	No. of Still Births (*per cent*)	Total Deliveries	No. of Live births (*per cent*)	No. of Still Births (*per cent*)
2014-15	5,866	5,837 (99.51)	29 (0.49)	903	894 (99.00)	9 (1.00)	318	315 (99.06)	3 (0.94)
2015-16	5,453	5,412 (99.25)	41 (0.75)	914	898 (98.25)	16 (1.75)	445	437 (98.20)	8 (1.80)
2016-17	5,314	5,270 (99.17)	44 (0.83)	742	736 (99.19)	6 (0.81)	331	326 (98.49)	5 (1.51)
2017-18	5,334	5,284 (99.06)	50 (0.94)	794	782 (98.49)	12 (1.51)	471	466 (98.94)	5 (1.06)
2018-19	5,123	5,067 (98.91)	56 (1.09)	842	837 (99.41)	5 (0.59)	466	458 (98.28)	8 (1.72)
Total	**27,090**	**26,870 (99.19)**	**220 (0.81)**	**4,195**	**4,147 (98.86)**	**48 (1.14)**	**2,031**	**2,002 (98.57)**	**29 (1.43)**

Source: Records of test-checked DHs

It can be seen that the three test checked DHs were able to contain stillbirth rate below two *per cent* during the five-year period.

Neonatal deaths: Neonatal death is death during the first 28 days of livebirth delivery. Neonatal death rate is also an indicator of quality of maternity and newborn care services. Maternal and NewBorn Health Toolkit, 2013 requires hospitals to record the number of neonatal deaths per month with causes of such deaths in the labour room register.

Status of neonatal deaths in the test checked DHs during 2014-19 are given in table-6.4:

Table-6.4: Position of neonatal deaths in the test-checked DHs during 2014-19

Year	Aizawl CH		Champhai DH		Lawngtlai DH	
	No. of Infant deaths	No. of neonatal death cases (percentage)	No. of Infant deaths	No. of neonatal death cases (percentage)	No. of Infant deaths	No. of neonatal death cases (percentage)
2014-15	165	71 (43.03)	19	5 (26.32)	22	2 (9.09)
2015-16	107	66 (61.68)	18	7 (38.89)	17	5 (29.41)
2016-17	114	85 (74.56)	7	3 (42.86)	14	4 (28.57)
2017-18	85	68 (80.00)	19	8 (42.11)	7	3 (42.86)
2018-19	84	72 (85.71)	13	8 (61.54)	6	3 (50.00)
Total	**555**	**362 (65.23)**	**76**	**31 (40.79)**	**66**	**17 (25.76)**

Sources: Records of test-checked DHs

As can be seen from the table above that neonatal death cases were 65.23 *per cent* of IMR in Aizawl CH, 40.79 *per cent* in Champhai DH and 25.76 *per cent* in Lawngtlai DH during the five-year period. Further, percentage of neonatal deaths showed an increasing trend in all the sampled DHs. The percentage of neonatal deaths increased from 43.03 to 85.71, 26.32 to 61.54 and 9.09 to 50 in Aizawl CH, Champhai DH and Lawngtlai DH respectively during 2014-15 to 2018-19. This indicates that neonatal death was one of the main contributors of IMR.

6.1.4 Intra-partum Care

Intra-partum Care includes care of pregnant woman during intra-partum period (the time period spanning childbirth from the onset of labour). Proper care during labour saves not only mothers and their newborn babies, but also prevents stillbirths, neonatal deaths and other complications. The quality of Intra-partum Care is largely affected by availability of essential resources and clinical efficiency of the medical and paramedical staff. A summarised position of availability/ non-availability of some of the basic facilities in the DHs are given in table-6.5:

Table-6.5: position of availability/ non-availability of some of the basic facilities in the DHs

Basic Facilities	District Hospital			Remark
	Aizawl CH	Champhai DH	Lawngtlai DH	
Intensive Care Unit	Available	Not available	Not available	ICU facility was inaugurated at Champhai DH in November 2019. As per IPHS, ICU is a desirable facility for 31 to 100 bedded hospital
Blood Bank	Available	Available	Available	
Eclampsia Room	Available	Available	Available	
Septic Room	Available	Available	Available	
Antenatal Care/ Post Natal Care ward	Available	Available	Available	
Drinking Water Facility	Available	Available	Available	

Source: Physical verification of the DHs

It can be seen that the sampled DHs are more or less equipped with all of the basic facilities for intra-partum care except for the absence of ICU in Lawngtlai DH.

6.1.5 Sick Newborn Care Unit (SNCU)

Sick New-born Care Unit (SNCU)/ Neonatal Intensive Care Unit (NICU) is a special new-born unit meant primarily to reduce fatality case among sick children born within the hospital or outside, including home deliveries within first 28 days of life. Therefore, SNCU plays a vital role in Post Natal Care.

IPHS norms for 101 to 500 bedded hospitals envisages that every DH should provide facilities of SNCU/ NICU with at least 12 beds and specially trained staff. It was seen in Audit that SNCU/ NICU was available in the three test-checked DHs *viz*: (i) Aizawl CH (12 beds), (ii) Champhai DH (10 beds) and (iii) Lawngtlai DH (seven beds) as of March 2019.

Availability of SNCU, *etc*. equipment: The IPHS for 31 to 100 bedded hospitals prescribes 20 types of essential equipment for Labour and Neonatal care of which Audit sampled and verified 10 equipments in Champhai and Lawngtlai DHs (31 to 100 bedded) which had labour room and neonatal unit or SNCU. The details of the sampled equipment and Audit findings are highlighted in table-6.6:

Table-6.6: Shortage/ non-availability of Neonatal and SNCU equipment in Champhai and Lawngtlai DHs

Sl. No.	Sampled equipment	Utility of the equipment	Audit findings
1.	Baby Incubators	Incubators are clear boxes which help keep your baby warm	Champhai and Lawngtlai DHs had one each
2.	Phototherapy unit	Phototherapy unit is used for the administration of doses of bright light in order to normalise the body's internal clock and/ or relieve depression	4 nos. in Lawngtlai DH and 7 nos. in Champhai DH
3.	Emergency Resuscitation Kit-Baby	Emergency Resuscitation Kit for babies	5 nos. in Lawngtlai DH and 2 nos. in Champhai DH
4.	Radiant Warmer	It is a bed for stabilising the body temperature of a newborn or premature infant. It has a heat source positioned above the baby to keep his or her temperature constant. Unlike an incubator, it is not enclosed	7 nos. in Lawngtlai DH and 10 nos. in Champhai DH
5.	Foetal Doppler	It is a hand-held ultrasound transducer used to detect the foetal heart beat for prenatal care	Not available in both Champhai and Lawngtlai DHs
6.	Cardiotocography Monitor	Cardiotocography (CTG) is a technical means of recording the foetal heartbeat and the uterine contractions during pregnancy	Not available in both the DHs.
7.	Vacuum extractor metal	A vacuum extraction, also known as a vacuum-assisted delivery, is used to help move the baby through the birth canal during delivery when a mom's labour has stalled	Not available in both the DHs
8.	Cardiac monitor baby and adult	A device to monitor the heartbeat	Not available in both the DHs
9.	Nebuliser baby	A nebuliser is a device that turns liquid medicine into a mist, used to treat the swelling in child's airway, shortness of breath, coughing, and wheezing	Two nos. each in Champhai and Lawngtlai DHs
10.	Weighing machine infant	For measuring the weight of baby	Two nos. each in Champhai and Lawngtlai DHs

Source: Physical inspection of DHs

It can be seen from the above that various essential equipment such as foetal doppler, cardiotocography, cardiac monitor were not available in the two test checked DHs.

Similarly, the IPHS norms for 200 to 300 bedded hospitals prescribed 27 types of essential equipment for Labour Ward, Neonatal and SNCU/ NICU. The details of availability of equipment are highlighted in table-6.7:

Table-6.7: Shortage/ non-availability of Neonatal and SNCU/ NICU equipment in Aizawl CH

Sl. No.	Equipment	As per IPHS norms	Status of availability	Remark
1.	Baby Incubators	3 (1-labour room and 2-neonatal room)	--	
2.	Phototherapy Unit	3	--	
3.	Emergency Resuscitation Kit-Baby	4	3	Attach in every warmer
4.	Standard weighing scale (each for the labour room and OT)	1	1+1	

Sl. No.	Equipment	As per IPHS norms	Status of availability	Remark
5.	Newborn Care equipment (1 set each for labour room and OT)	1	--	Available
6.	Double–outlet Oxygen Concentrator (each for the labour room and OT)	1	3	
7.	Radiant Warmer	3 (1-labour room and 2-neonatal room)	3	
8.	Room Warmer	2	--	
9.	Foetal Doppler	2	1	
10.	Cardiotocography Monitor	3	--	
11.	Delivery Kit	15	36	Episiotomy Kit and Delivery Kit are combined
12.	Episiotomy kit	10		
13.	Forceps Delivery Kit	2	2	
14.	Crainotomy	2	--	
15.	Vacuum extractor metal	2	1	
16.	Silastic vacuum extractor	2	--	
17.	Pulse Oxymeter baby and adult	2 each	1	
18.	Cardiac monitor baby and adult	2	--	
19.	Nebulizer baby	4 (for ICU and wards)	--	
20.	Weighing machine adult	6	1	
21.	Weighing machine infant	4	1	
22.	Head box for oxygen	6	1	
23.	Haemoglobinometer	1	--	
24.	Glucometer	1	1	
25.	Public Address System	1	--	
26.	Wall Clock	1	7	
27.	BP Apparatus and Stethoscope	3+3	1	

Source: Physical inspection of Aizawl CH

It can be seen from the above that various essential equipment such as incubator, phototherapy unit, cardiotocography, cardiac monitor, cardiotocography monitor, nebuliser, haemogloginometer were not available in Aizawl CH.

Audit observed that lack of the essential equipment in the SNCU/ NICU could be one of the factors contributing to the high proportion of neonatal deaths in IMR.

The department stated (October 2020) that certain essential equipment as per IPHS norms such as incubators were outdated and have been replaced with warmers and assured that various equipment like phototherapy unit, cardiac monitor, nebuliser and haemoglobinometer would be procured under NHM [Reproductive and Child Health (RCH) programme] whenever funds are available for SNCU/ NICU.

Conclusion

There was a high incidence of neonatal deaths in the test checked DHs ranging from 50 to 85.71 *per cent* during 2018-19 and increasing trend was seen in all the selected DHs during the period. The Department had not reviewed the seriousness of the problem and action taken was not available. The rate of stillbirths in the three test checked DHs ranged between 0.81 to 1.43 *per cent* during 2014-19.

A review of only ten sampled types of essential equipment for Labour Ward, Neonatal and Special Newborn Care Unit (SNCU) in respect of Champhai and Lawngtlai DHs revealed that the test checked hospitals did not have all the essential equipment such as foetal doppler, cardiotocography and cardiac monitor, required for child deliveries and care of new born babies. Further, a review of 27 types of essential equipment in Labour Ward, Neonatal and SNCU in Aizawl Civil Hospital revealed that various essential equipment such as incubator, phototherapy unit, cardiotocography, cardiac monitor, cardiotocography monitor, nebuliser, haemogloginometer were not available.

Recommendations

i. The DHS and District Hospitals may investigate the causes and take appropriate specific steps to reduce high incidence of maternal and neonatal deaths.

ii. The State Government may strictly monitor the involvement of ASHA workers of the Health Department for counselling of expectant mothers to reduce MMR and neonatal deaths.

iii. The Government may ensure that all the District Hospitals are equipped completely with all the essential equipments for child deliveries and new born baby care.

iv. The Department may specifically review the fire safety arrangements in SNCU/ NICU units of DHs considering high incidents of sick new born babies.

6.2 Cancer

Cancer incidence, common types of cancer and cancer mortality in the State: The Population Based Cancer Registry (PBCR), Aizawl, Mizoram as part of National Cancer Registry Programme was started (06 March 2003) in Aizawl CH. The PBCR, Aizawl, Mizoram registers all malignant neoplasm (cancers) with a morphology behaviour code of "3" (primary) and "6" (secondary) as defined by the International Classification of Disease – Oncology. The number of district-wise cancer cases registered by the PBCR, Aizawl, Mizoram during 2013-17 is given in table-6.8:

Table-6.8: District-wise cancer cases registered during 2013-17 by the PBCR

District	2013	2014	2015	2016	2017
Aizawl	778	783	836	902	839
Lunglei	168	204	204	197	242
Champhai	185	173	157	149	148
Siaha	59	79	60	64	73
Serchhip	99	94	112	90	105
Kolasib	111	117	128	161	162
Lawngtlai	85	63	54	63	64
Mamit	96	108	111	98	98
Total	**1,581**	**1,621**	**1,662**	**1,724**	**1,731**

Source: PBCR, Aizawl, Mizoram

The number of Cancer cases had increased from 1,581 to 1,731 during the period. The types of Cancer prevalent in the State during the period 2013-17 are given in table-6.9.

Table-6.9: Types of Cancer prevalent in Mizoram

Types of Cancer	Number of cases				
	2013	2014	2015	2016	2017
Malignant Neoplasm, without specification of site	185	155	143	179	162
Bronchus or Lungs, Unspecified	177	184	163	157	122
Stomach, Unspecified	125	108	121	98	119
Cervix Uteri, Unspecified	100	116	117	122	101
Breast, Unspecified	79	80	105	91	125
Oesophagus, Unspecified	83	84	67	90	95
Others	832	894	946	987	1,007
Total	**1,581**	**1,621**	**1,662**	**1,724**	**1,731**

Source: PBCR, Aizawl, Mizoram

Diagnostic and linkage services: As per rules, cancer screening services are to be provided in DHs. The status of availability of cancer screening and confirmatory services in the test checked DHs are given in the table-6.10:

Table-6.10: Services and linkages available for cancer treatment in the sampled DHs

Hospital	Services available in DH	Linkage to nearest tertiary centres/ medical colleges for referral services
Aizawl CH	Diagnostic procedures such as Histopathology, Immuno-histochemistry, Cytopathology including FNAC, Blood fluid analysis	1. Mizoram State Cancer Institute, Zemabawk, Aizawl for chemotherapy and Radiotherapy 2. Dr. Bhubaneswar Borooah Cancer Institute (BBCI), Guwahati for treatment and diagnosis 3. Apollo Gleneagles, Hospital, Kolkata for treatment and diagnosis 4. TATA Medical Centre, Kolkata for treatment and diagnosis 5. AMRI Hospital, Kolkata for treatment and diagnosis
Champhai DH	FNAC, Endoscopy and Ultrasonography	Linked with Aizawl CH
Lawngtlai DH	No diagnostic facility available in the Hospital	Linked with Aizawl CH

Source: Records of DHs

It was noticed that none of the test checked DHs maintained data on cancer such as number and type of cancer cases detected/ diagnosed in the HDs, number of cancer patient referred to specialised health care facilities, *etc*. Further, it was noticed that Lawngtlai DH did not have diagnostic facilities while Champhai DH did not have biopsy facilities for detection of cancer.

Thus, it was seen that the DHs especially Champhai and Lawngtlai were ill-equipped or not equipped at all for diagnosis of cancer and the cases had to be referred to a facility of a higher centre. Cancer treatment was done at specialised institutions in Aizawl, Guwahati and Kolkata.

6.3 Human Immunodeficiency Virus (HIV)/ Acquired Immuno Deficiency Syndrome (AIDS)

GoI established the National AIDS Committee within the Ministry of Health and Family Welfare when the first case of HIV was diagnosed in Chennai, Tamil Nadu in 1986 amongst six female sex workers. On the basis of National AIDS Committee, the Government set up the National AIDS Control Organisation (NACO) in 1992, to oversee policies and prevention and control programmes relating to HIV and AIDS and launch the National AIDS Control Programme for HIV prevention. Subsequently, the State AIDS Control Societies were set up in States and Union Territories for implementation of NACO programme at State level with functional independence to upscale and innovate.

GoM constituted the Mizoram State AIDS Control Society on 22 July 1998 with the objective to prevent HIV transmission and to control the spread, reduce morbidity and mortality associated with HIV infection, to strengthen HIV/ AIDS surveillance, to provide technical support to Government and non-Government organisations in the prevention and control of HIV/ AIDS.

Prevalence of HIV: Status of year-wise HIV cases in Mizoram during 2014-19 is shown in table-6.11:

Table-6.11: Status of year-wise HIV cases in Mizoram during 2014-19

Name of District	No. of HIV cases					Remark
	2014-15	2015-16	2016-17	2017-18	2018-19	
Aizawl	921	1,024	1,457	1,660	2,004	AIDS cases could not be calculated as the indicator had been removed from the data system by NACO
Champhai	130	141	142	136	165	
Kolasib	71	118	226	161	192	
Lawngtlai	19	30	22	55	38	
Lunglei	75	81	90	108	228	
Mamit	16	34	46	59	50	
Siaha	20	22	31	14	34	
Serchhip	28	38	23	35	55	
Total	**1,280**	**1,488**	**2,037**	**2,228**	**2,766**	

Source: Records of Mizoram State AIDS Control Society

The number of HIV cases detected had increased in the State from 1,280 in 2014-15 to 2,766 in 2018-19.

Conclusion

The number of cancer cases diagnosed in the State showed an increasing trend during the period from 2013 to 2017, from 1,581 cases in 2013 to 1,731 cases in 2017. Out of the three sampled DHs, Champhai and Lawngtlai DHs were ill equipped for diagnosis of cancer related tests. Further, none of the sampled hospitals maintained data on cancer viz., number and type of cancer cases detected/ diagnosed, number of cancer patient referred to specialised health care facilities, *etc*. Cancer care/ treatment was mainly done as referrals to specialised institutes in Aizawl, Guwahati and Kolkata.

Number of HIV cases have more than doubled during 2014-19 as the number of HIV positive cases have increased from 1,280 in 2014-15 to 2,766 in 2018-19.

Recommendation

The Government may strengthen the testing facilities for detection of Cancer and AIDS cases in the DHs of the State by providing required equipments.

CHAPTER-7

EVALUATION OF IN-PATIENT SERVICES THROUGH OUTCOME INDICATORS

Chapter - 7: Evaluation of In-Patient Services through Outcome Indicators

The productivity, efficiency, clinical care capability and service quality of hospital were evaluated through certain outcome indicators (OIs) *viz*., Bed Occupancy Rate, Leave Against Medical Advice Rate, Average Length of Stay, Bed Turnover Rate and Referral Out Rate. The categorization and methodology of evaluating these OIs are given in the table below:

Table-7.1: Calculation of quality indicators

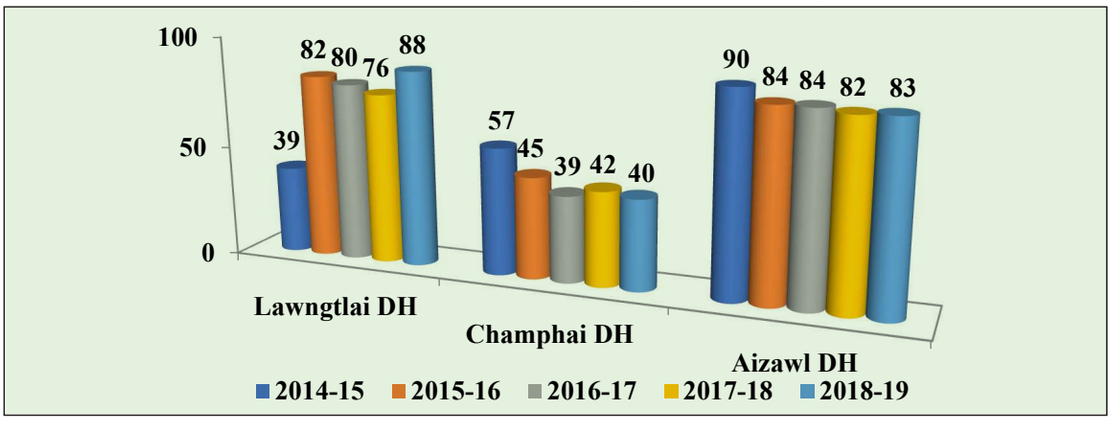
Type	Quality Indicator	Numerator	Denominator
Productivity of hospital	BOR (in *per cent*)	Total patient bed days X 100	Total no. of functional beds X No. of days in a month
Clinical care capability of hospital	ALoS (in days)	Total patient bed days	Discharges in the year (including death, LAMA, referred)
Service quality of hospital	LAMA (Rate/ 1,000)	Total no. of LAMA X 1,000	Total no. of admission
Efficiency	BTR	Total discharge including death	Total no. of functional beds
	ROR (in *per cent*)	Total no. of cases referred to higher centres	Total no. of admission

Source: IPHS norm

7.1 Bed Occupancy Rate

The Bed Occupancy Rate is the average occupancy of hospital beds within a given time period. It is an indicator of the productivity of the hospital services and is a measure of verifying whether the available infrastructure and processes are adequate for delivery of health services. As per IPHS norms, the BOR of hospitals should be at least 80 *per cent* (As per a study conducted by KPI institute, a global institutional research, the ideal BOR is 85-90 *per cent.* Values below 70 *per cent* and above 95 *per cent* can be regarded as a reason for concern and measures are to be taken immediately). The BOR of the selected DHs are represented in chart-7.1:

Chart-7.1: BOR of the three test checked DHs - Lawngtlai DH[20], Champhai DH & Aizawl CH



Source: Records of test checked DHs

It can be seen from the above that BOR of Lawngtlai DH during 2014-15 and 2017-18 was 39 *per cent* and 76 *per cent* which were below the minimum benchmark of 80 *per cent* as per IPHS. BOR of Champhai DH during the audit period was constantly lower than the prescribed minimum level of 80 *per cent* ranging from 39 to 57 *per cent*. Low BOR can be attributed to the fact that the availability of beds was much higher than the prescribed number of beds.

Aizawl CH, on the other hand, has an overall BOR ranging from 82 to 90 *per cent* during 2014-19. However, on analysing the ward-wise BOR of Aizawl CH, it was observed that wards like NICU and Cardiology ward had more than 100 *per cent* BOR during the five years period while wards like Maternity and Pregnancy Ward, Eye Ward, *etc*. had below the minimum level of 80 *per cent*. Since Aizawl CH was better equipped than other DHs, the BOR was higher, it being a referral centre too.

Audit observed that a higher BOR posed risk of overcrowding which would incapacitate the hospital to provide the crucial medical care to the patients in need during the times of overcrowding. On the other hand, lower BOR also indicated that resources were not being utilised to the optimum.

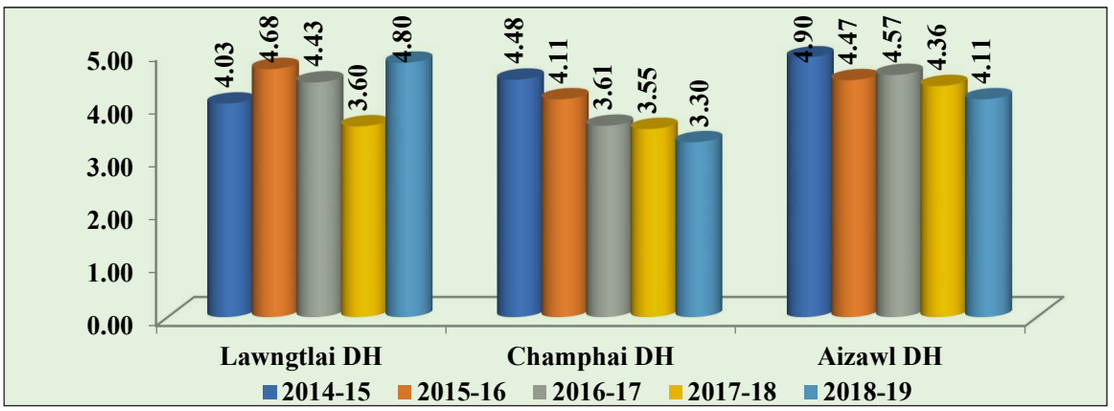
7.2 Bed Turnover Rate

Bed Turnover Rate (BTR)[21] is a measure of the utilisation of available bed capacity and serves as an indicator of the efficiency of the hospital. It is the number of times there is change of occupant for a bed during a given time period. The BTR of the test-checked DHs during 2014-19 is represented in chart-7.2:

[20] Midnight head count of In-patients was conducted from March 2018 only

[21] BTR = No. of patients discharged (including death) in a given time period/ No. of functional beds in the hospital during that time

Chart-7.2: BTR of the three test checked DHs – Lawngtlai DH, Champhai DH and Aizawl CH



Source: Records of test checked DHs

The average BTR per month of Lawngtlai DH, Champhai DH and Aizawl CH for the period 2014-19 was approximately 4.31, 3.81 and 4.48 respectively. High BTR indicates high utilisation of the inpatient beds in a department while low BTR could be attributed to fewer patient admissions or longer duration of stay in the departments.

7.3 Referral Out Rate

As per IPHS norms, referral services to higher centres denote that the facilities for treatments were not available in the hospitals. The Referral Out Rate (ROR)[22] in the two[23] test-checked DHs during 2014-19 are given in table-7.2:

Table-7.2: ROR of Lawngtlai and Champhai DHs

Year	Lawngtlai DH		Champhai DH[24]	
	No. of referral made	Rate per thousand	No. of referral made	Rate per thousand
2014-15	51	28.80	30	7.48
2015-16	42	20.70	41	10.98
2016-17	52	29.43	--	--
2017-18	68	46.70	--	--
2018-19	76	37.46	62	15.66

Source: records of test-checked DHs

In Lawngtlai DH, the ROR ranges from 21 to 47 per thousand during 2014-19 while ROR of Champhai DH ranged from 7 to 16 per thousand during the same period.

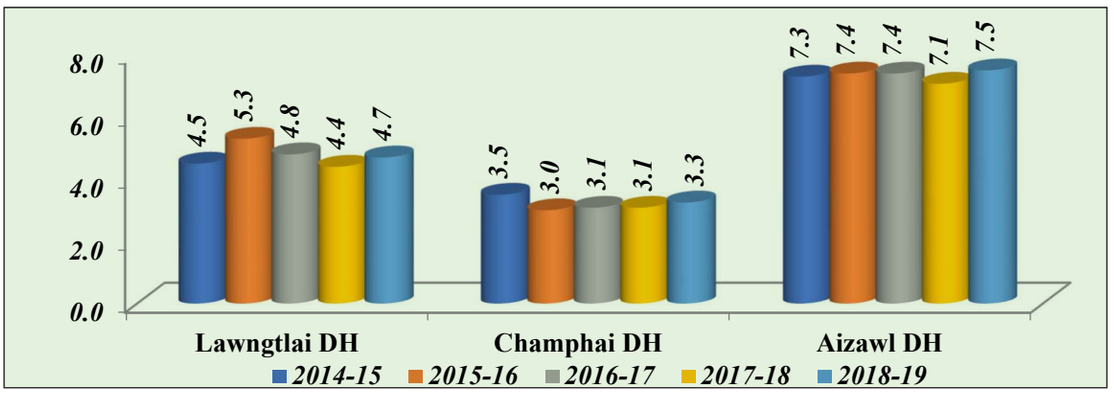
7.4 Average Length of Stay

Average Length of Stay (ALoS) is an indicator of clinical care capability and determines the efficiency and effectiveness of interventions. Length of Stay is the time between the admission and discharge/ death of the patient. Improving and reducing length of stay

[22] ROR= (No. of Refer out x 1,000) ÷ No. of New admission
[23] Records not available for Aizawl CH
[24] Records for the period January 2017 to December 2018 was not available in Champhai DH

improves financial, operational and clinical outcomes by decreasing the cost of care for a patient. ALoS in the three test-checked district hospitals was as shown in chart-7.3:

Chart-7.3: ALoS of the three sampled DHs – Lawngtlai DH, Champhai DH and Aizawl CH



Source: records of test-checked DHs

It can be seen from the above that the ALoS per month for the audit period was approximately five days, three days and seven days for Lawngtlai DH, Champhai DH and Aizawl CH respectively.

7.5 Left Against Medical Advice

As per IPHS, Left Against Medical Advice (LAMA) rate[25] measure the service quality of a hospital. LAMA refers to a patient who leaves the hospital against the advice of the doctor. LAMA rate for the three DHs for the period 2014-2015 to 2018-19 is shown in table-7.3:

Table-7.3: LAMA status of the three test checked DHs

Year	Aizawl CH		Champhai DH[26]		Lawngtlai DH	
	No. of LAMA	Rate	No. of LAMA	Rate	No. of LAMA	Rate
2014-15	23	4.30	8	2.27	1	0.76
2015-16	20	2.25	91	24.93	7	3.40
2016-17	6	0.37	64	18.02	2	1.01
2017-18	5	0.80	26	6.92	4	2.59
2018-19	2	0.27	82	19.35	6	3.08

Source: records of test-checked DHs

It can be seen that there were 20 cases of LAMA in Lawngtlai DH, 271 cases in Champhai DH and 56 cases in Aizawl CH during the period 2014-19. The average rate of LAMA in the three sampled DHs was thus, calculated approximately at 2.17, 14.30 and 1.60 for Lawngtlai DH, Champhai DH and Aizawl CH respectively.

[25] No. of LAMA during a given period/ No. of admissions during the period X 1,000

[26] Records for the period January 2017 to December 2018 was not available

7.6 Outcomes *vis-à-vis* Availability of Resources in District Hospitals

The relative monthly performance of the test-checked hospitals on various outcome indicators worked out by audit and the corresponding availability of resources for the period 2014-19 is shown in the table below:

Table-7.4: Outcomes *vis-à-vis* availability of resources in District Hospitals

Hospital	Productivity	Efficiency	Clinical care	Service quality	Availability of resources		
	BOR (%)	BTR (%)	ALoS in days	LAMA per 1000	Doctors (%)	Nurses (%)	Essential drugs (%)
Aizawl CH	85	4.49	7.34	1.60	182	90	9
Champhai DH	48	3.81	3.20	15.52	74	107	38
Lawngtlai DH	73	4.31	4.74	2.17	78	139	50
Benchmark	***80-100%***	***4.34***	***6.28***	***4.42***	***100%***	***100%***	***100%***

As seen from table above that every hospital under performed one or more outcome indicator. The details in this regard are as follows:

- The bed occupancy rate in Champhai DH and Lawngtlai DH was below the IPHS benchmark of 80 *per cent* having 75 and 34 functional beds of respectively.
- The Average length of stay in Aizawl CH was higher at 7.34 days per patient per month than the than the benchmark of 6.28 days per patient per month for the three test checked DHs indicating an inadequate intervention with availability of 182 *per cent* doctors and 90 *per cent* staff nurses against IPHS.
- LAMA rate was high in Champhai DH at 15.52 per 1,000, indicating a failure of the consensus and understanding between the attending physician and patients regarding the need for continued hospitalisation.

7.7 Comparison of Outcome Indicators of Test checked DHs with State's Figures

Comparison of Outcome Indicators of test checked DHs with State's figures is shown in the table-7.5:

Table-7.5: Comparison of Outcome Indicators of test checked DHs with State's figures

Year	DHs	Bed Occupancy Rate		Average Length of Stay		Bed Turnover Rate	
		DHs	State	DHs	State	DHs	State
2014-15	Lawngtlai DH	38.95	54.44	4.5	5.18	4.03	3.96
	Champhai DH	56.83		3.5		4.48	
	Aizawl CH	90.08		7.3		4.90	
2015-16	Lawngtlai DH	82.36	56.99	5.3	5.17	4.68	3.45
	Champhai DH	45.36		3.0		4.11	
	Aizawl CH	84.13		7.4		4.47	
2016-17	Lawngtlai DH	79.67	54.4	4.8	5.01	4.43	3.22
	Champhai DH	38.65		3.1		3.61	
	Aizawl CH	84.00		7.4		4.57	
2017-18	Lawngtlai DH	76.21	49.34	4.4	4.74	3.60	2.98
	Champhai DH	42.23		3.1		3.55	
	Aizawl CH	82.48		7.1		4.36	
2018-19	Lawngtlai DH	87.56	56.71	4.7	5.3	4.80	2.95
	Champhai DH	40.45		3.3		3.30	
	Aizawl CH	83.44		7.5		4.11	

Source: records of test-checked DHs

It can be seen from the table that:

- Hospitals (both Government and Private) in the State had a BOR ranging from 49 to 57 *per cent* during 2014-19. Champhai DH recorded a lower BOR than the State's average during 2015-16 to 2018-19;
- The average length of stay of patient in Lawngtlai DH and Champhai DH was more favourable than the State's average during the audit period. However, Aizawl CH recorded an average length of stay of approximately seven days which was higher than the State's average during 2014-19. Higher ALoS in Aizawl CH can be attributed to the fact that critically ill patients were being referred from various health institutions from the different districts; and
- The three test-checked DHs recorded a BTR which was constantly higher than the State's average during 2014-19.

Conclusion

Wards like NICU and Cardiology ward in Aizawl CH had more than 100 *per cent* BOR during the five years period, while wards like Maternity and Pregnancy Ward, Eye Ward, *etc*. had below the minimum level of 80 *per cent*. The referral rates from other DHs to Aizawl CH was higher due to better facilities there. Rate of LAMA was high in Champhai DH at 15.52 per 1,000 against the benchmark of 4.42.

Recommendations

i. The Government should adopt an integrated approach, allocate resources in ways which are consistent with patient priorities and needs to improve the monitoring and functioning of the district hospitals towards facilitating a significant change in health outcomes.

ii. Corrective action be taken to reduce LAMA rates in Champhai DH.

iii. The referral rates from DHs need to be reduced by providing comprehensive and quality care in all DHs by increasing physical infrastructure and manpower in these DHs.

Aizawl
The 12 July, 2021

(SARAT CHATURVEDI)
Principal Accountant General, Mizoram

Countersigned

New Delhi
The 14 July, 2021

(GIRISH CHANDRA MURMU)
Comptroller and Auditor General of India