Chapter-4 Delivery of Healthcare Services

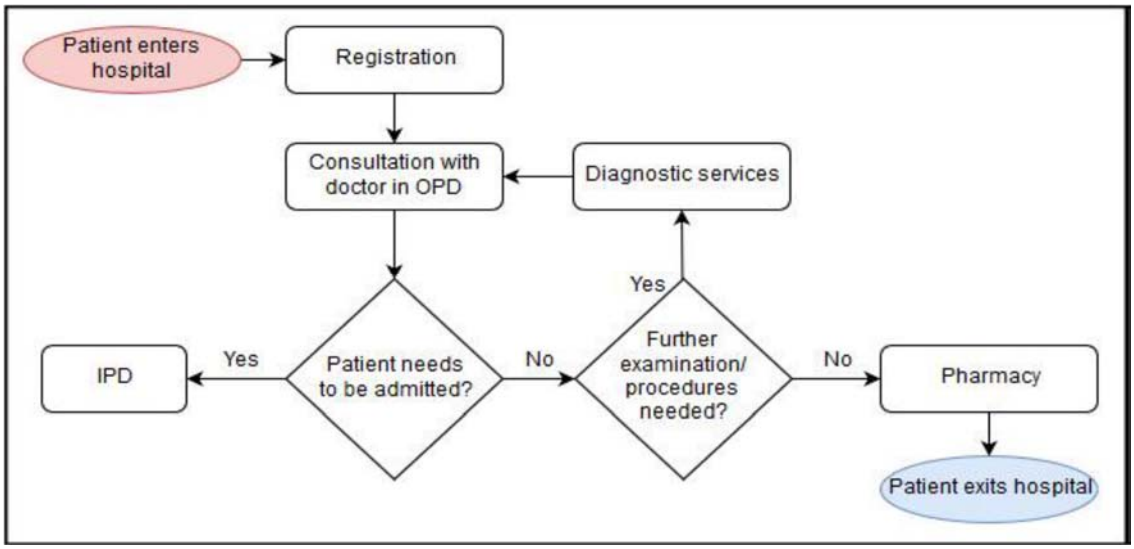
Delivery of OPD, IPD, ICU, OT, Trauma & Emergency, and Diagnostic services.

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. OPD doctors then examine them, 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



The following paragraphs discuss Audit findings pertaining to OPD services like registration, consultation, waiting time and other basic OPD facilities/ services in the test-checked DHs.

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. The 'waiting time' at the Reception/Registration counter of a hospital play 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.

4.1.2 Inadequate registration counters

NHM Assessor guidebook (Vol-1) estimates the average time required for registration to be 3-5 minutes per patient, which roughly works out to about 20 patients/ hour per counter.

Audit examined the number of patients registered during 2018-19 in each test-checked DH along with the availability of registration counter(s) and it was observed that the available registration counter(s) were inadequate in two DHs, *viz.* Shillong CH and Jowai CH as shown in the table below:

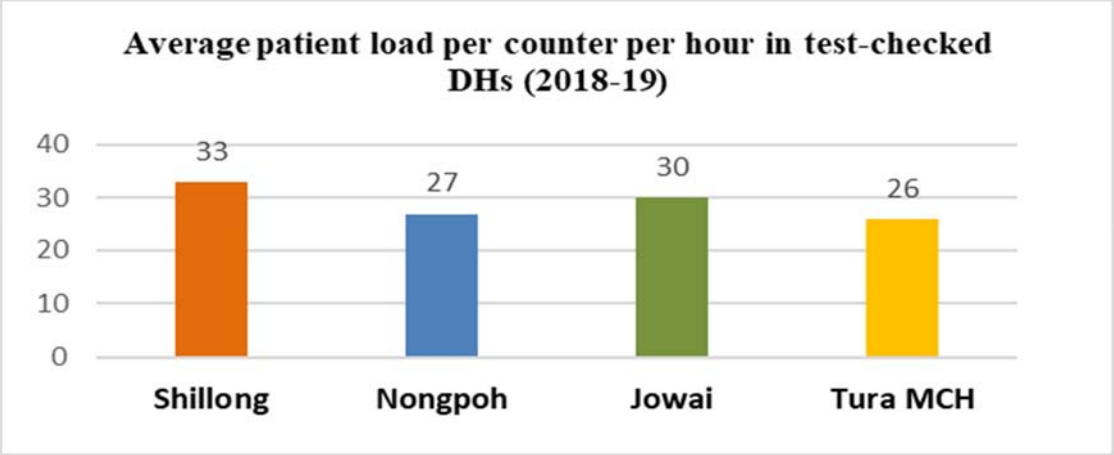
Table 4.1: Hospital wise No. of registration counters

Name of DH	Total No. of registered patients	OPD registration hours/day	No. of OPD working days during 2018-19	No. of required registration counters {2÷(4 x 3)}÷20	No. of counter(s) available	Shortfall
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Shillong CH	201306	4	308	8	5	3
Nongpoh CH	32754	4	309	1	1	0
Jowai CH	55930	3	307	3	2	1
Tura MCH	39454	5	309	1	1	0

Shillong CH had the highest number of patients registered during 2018-19, followed by Jowai CH.

The following chart shows that the average patient load per counter per hour registered during 2018-19 of the test-checked DHs ranged from 33 in Shillong CH to 26 in Tura MCH which was higher than the ideal limit of 20 patients/hour for all test-checked DHs:

Chart 4.2



Further, it was seen that the OPD registration hours per day were not uniform in all the DHs thereby impacting availability of services to the visiting patients. The Quality Assurance Guidebook prescribes a minimum of six hours of OPD Services at DHs. Further, the IPHS envisages SOPs for OPD Management and training of staff for implementation of these procedures. However as highlighted in Table 4.1, the OPD hours adopted by the test checked DHs were not uniform ranging from three to five hours and thus also below the standard of six hours.

During Exit conference (16 July 2020), the Commissioner & Secretary stated that the matter will be looked into and more number of registration counters will be opened up (if required) after taking into account of the number of patients flow at respective DHs.

4.1.3 Waiting time

The 'wait time' for registration at the Registration counters and wait time between registration and consultation as per the response of 88 patients during Patient Satisfaction Survey conducted in the test-checked DHs is tabulated below:

Table 4.2: 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
Shillong CH	5	33	7 (21%)	24 (73%)	2 (6%)
Nongpoh CH	1	16	12 (75%)	2 (13%)	2 (12%)
Jowai CH	2	29	25 (87%)	4 (13%)	-
Tura MCH	1	10	8 (80%)	2 (20%)	-

(B) Wait time' between registration and consultation with the doctor

Name of DH	No. of Patients surveyed	Wait time ranged (in minutes)							
		1-10	11-20	21-30	31-40	41-50	51-60	111-120	171-180
Shillong CH	33	9 (27.3%)	3 (9.1%)	6 (18.2%)	-	1 (3.0%)	8 (24.2%)	4 (12.1%)	2 (6.1%)
Nongpoh CH	16	4 (25.0%)	10 (62.5%)	2 (12.5%)	-	-	-	-	-
Jowai CH	29	10 (34.5%)	8 (27.6%)	9 (31.0%)	-	-	2 (6.9%)	-	-
Tura MCH	10	7 (70.0%)	-	2 (20.0%)	-	1 (10.0%)	-	-	-
Total	**88**								

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

As can be seen from the Table above:

- In Shillong CH, out of 33 patients surveyed, 79 *per cent* waited for more than five minutes to get registered at the counters whereas the time taken to consult the doctors ranged from 30 to 180 minutes;
- In Nongpoh CH, out of 16 patients surveyed, 75 *per cent* of the patients could register within five minutes whereas 25 *per cent* waited for more than five minutes to get registered. The wait time between registration and consultation with the doctor in respect of all the patients was within 30 minutes;
- In Jowai CH, out of 29 patients surveyed, 87 *per cent* patients could get registered within five minutes whereas only 13 *per cent* waited for more than five minutes. The wait time after registration for meeting with the doctor was 51 to 60 minutes for seven *per cent* of the surveyed; and
- In Tura MCH, out of 10 patients surveyed, 80 *per cent* waited for less than five minutes and 20 *per cent* waited for more than five minutes for registration. Ten *per cent* surveyed beneficiaries had to wait for 41-50 minutes between registration and consultation with the doctor.

Thus, there was scope for further improvement of the waiting time for consultation by adding more doctors and registration staff.

4.1.4 Availability of basic facilities in OPD

The Assessor's Guidebook for Quality Assurance in District Hospitals, 2013 (Vol-1) envisages provision of basic facilities in the OPD areas for the patients. Audit observations in this regard facility-wise are as follows:

OPD facilities	Status	Illustrative Photographic evidence
Availability of adequate/ suitable seating facility	Available but inadequate as per patients load in all test-checked DHs.	 Patients standing in the OPD area at Jowai CH due to inadequate number of chairs: Photo taken on 17/02/2020
Availability of separate toilets for men and women	Not available in Nongpoh CH, Jowai CH and Shillong CH. However, in Shillong CH, paid toilet facility was available outside the OPD building.	 Patients have to go outside the hospital building to relieve themselves at the only available paid toilet at Shillong CH: Photo taken on 20/01/2020

OPD facilities	Audit findings
Standard operating procedures for OPD management	SOP for OPD management was not developed by the test-checked DHs.
Availability of disabled friendly toilet and wash basin.	Available in Shillong CH but not available in the remaining three test checked DHs.
Computerised Registration	Registration process was computerised only in Shillong CH, other test-checked DHs maintained manually, without proper format.
Referral cases	Referrals made and referrals received as well as reasons for referrals are not captured in computerised registration system/ register.
Clinical history of the re-visit patients	Diagnosis/ clinical history of the re-visiting patients were not captured in computerised registration system/ register.
Online Registration	Online registration facility was not provided by any of the test-checked DHs.
Availability of entertainment such as TV, health information and reading material in waiting area	None of the test-checked DHs has provided these facilities.

During exit conference (16 July 2020), the DHS(MI) stated that the issue of non-availability of potable drinking water will be brought up to the Hospital Management Society for necessary action.

Conclusion

Two test-checked DHs namely Shillong and Jowai had inadequate registration counters as against the requirements. The average patient load per counter per hour in

Shillong CH and Tura MCH was 33 and 26 respectively as against the norm of 20 patients per hour for registration. The OPD hours adopted by the test checked DHs were not uniform ranging from three to five hours and also below the standard of six hours, thereby impacting availability of services to the patients. The State Government had not issued directives for uniform OPD timings.

The OPD of the test-checked DHs had various shortcomings in availability of basic facilities like non-availability of separate toilets for men and women, disabled friendly toilet and washbasin, potable drinking water, online registration, in-adequacy of suitable seating facility, *etc.* Further, except for Shillong CH, the registration of patients was not computerised in the other three DHs. The referral cases and clinical history of patients was also not computerised.

Recommendations

i. *The State Government may ensure availability of basic facilities/services in the OPD of each hospital as prescribed in the Assessor's Guidebook for Quality Assurance of Services in District Hospitals, 2013 (Vol-1).*

ii. *They may ensure documentation/computerisation of referral cases and clinical history of patients.*

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 4.3: **IPD services in a hospital**

4.2.1 Availability of IPD services in the test-checked DHs

As per NHM Assessor's Guidebook, a DH should provide specialist in-patient services pertaining to General Medicine, General Surgery, Dialysis, Ophthalmology, Orthopaedics, *etc.* We observed that most of the required services were, however, not available in the test-checked DHs as shown in the following table:

Table 4.3: Status of In-patient services in test-checked District Hospitals

Hospital	Act*	Burns	Dia	GM	GS	Oph	Orth	Phy	Psy
Shillong CH	No	No	Yes	Yes	Yes	No	Yes	Yes	No
Nongpoh CH	No	No	No	Yes	No	Yes	No	Yes	No
Jowai CH	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Tura MCH	The DH is exclusively for Maternal and Child care								

Source: Information furnished by the health centre.

*Act: Accidents and Trauma, Dia: Dialysis, GM: General medicine, GS: General surgery, Oph: Ophthalmology, Orth: Orthopaedics, Phy: Physiotherapy, Psy: Psychiatry.

As can be seen from the table above, in-patient services for Accidents & Trauma and Burns though required to be provided as per norms, were not available in any of the test checked DHs, while Dialysis and Psychiatry indoor service was available only in Shillong CH and Jowai CH respectively. Due to non-availability of all in-patient services, the DHs failed to provide comprehensive health care services to the people and patients had to visit costly private hospitals/ clinics for their healthcare needs.

Further, the test-checked DHs did not maintained computerised data of admissions/ referrals and treatment given to the in-patients.

4.2.2 Referred out patients

During 2014-19, out of 1,45,021 patients[14] admitted in the test-checked DHs, 7,605 patients (5.2 *per cent*) were referred out by the test-checked DHs.

Hospital-wise number of cases referred out during 2014-19 is given in the table below:

Table 4.4: Cases referred out during 2014-19 in test-checked DHs

Year	Shillong CH	Nongpoh CH	Jowai CH	Tura MCH	Total
2014-15	Records not available	845	343	23	1211
2015-16	Records not available	874	377	34	1285
2016-17	Records not available	835	495	73	1403
2017-18	438	900	457	37	1832
2018-19	501	947	404	22	1874
Total	**939**	**4401**	**2076**	**189**	**7605**
Total IPD during 2014-19	**29008** (during 2017-19)	**26332**	**68222**	**21459**	**145021**
% of referred out of IPD	***3.2***	***16.7***	***3.0***	***0.9***	***5.2***

Source: Information furnished by test-checked DHs.

As can be seen from the Table above, Nongpoh CH had referred out 16.7 *per cent* of its patients. In fact, out of the total 7,605 referrals out cases during 2014-19, the Nongpoh CH referral out cases alone was 4,401 *i.e.* 57.9 *per cent.* Reasons attributed by the test-checked DHs for the referral out of patients are; (i) non-availability of facilities (Shillong CH), (ii) Absence of specialised doctors & services like blood bank & OT, lack of equipment, *etc.* (Nongpoh CH), (iii) Absence of ICU, CECT, dialysis & other equipment, lack of manpower, *etc.* (Jowai CH) and (iv) Un-availability of beds (Tura MCH).

[14] Figures of Shillong CH is taken for two years (2017-19) only since No. of patients referred out was not furnished for the period from 2014-17.

Thus, the test-checked DHs particularly, the Nongpoh CH failed to provide comprehensive and quality secondary health care services to the citizens of the district.

Further scrutiny of records revealed that GoI, Department of Empowerment of Persons with Disabilities, Ministry of Social Justice & Empowerment had sanctioned and released (March 2018) ₹ 2.33 crore[15] to Meghalaya for setting up a State Spinal Injury Centre at Shillong CH. The objective of the project was to provide better treatment facilities to spinal injury patients caused due to roadside accident and unscientific coal mining in the State. The Hospital Management Society of Shillong CH failed to ensure timely completion of the Spinal Injury Centre at Shillong CH, not only resulting in idling of funds of ₹ 2.45[16] crore but had also deprived spinal injury patients of the State in getting treatment in Shillong CH.

The Joint Director of Health Services (SS), Shillong CH stated (January 2020) that the grant under Spinal Injury Centre was lying idle because the infrastructure for the same was to be constructed by the State Government from funds received from GoI for construction of Trauma Centre.

Our scrutiny revealed that the GoM had received funds of ₹ 6.75 crore (March 2017) for construction of the Trauma centre and as per the MoU between GOI and the State, the Trauma Centre had to be built within 18 months (September 2018) and made functional with equipment/ manpower by March 2019. The reasons for the entire funds lying unutilised were not furnished.

Further, the DHS(MI) had not furnished Utilisation Certificates in respect of funds received for setting up of Spinal Care Centre as well as Trauma Centre.

In view of the above, the reply furnished by the Joint Director was factually incorrect, since the State Government had inordinately delayed the construction work of both the Trauma Centre and the Spinal Injury Centre despite funds made available to them by GOI as per their own Agreement with them.

4.3 Intensive Care Unit Services

Intensive Care Unit (ICU) is essential for critically ill patients requiring highly skilled life-saving medical aid and nursing care. These include major surgical and medical cases such as head injuries, severe haemorrhage, poisoning, *etc*. ICU services in a District Hospital are essential for providing minimum assured services as per IPHS for DHs having more than 100 beds.

Audit observed that ICU service was available only in Shillong CH. Due to absence of ICU facility in the other three test-checked DHs, patients approaching these hospitals

[15] Surgical items (₹ 1.86 crore), Indoor requirement (₹ 0.20 crore), Physiotherapy equipment/ machineries (₹ 0.11 crore), Occupational Therapy equipment (₹ 0.02 crore) and Prosthetic & Orthotic Kits & Consumables (₹ 0.14 crore).

[16] This includes bank interest of ₹ 0.12 crore.

despite being in an emergent condition were likely to be referred out and/ or directed to private hospitals.

As regards the ICU at Shillong CH, we observed that it was well equipped with the necessary equipment for ICU except Deep Vein Thrombosis prevention devices suction[17]. However, the ICU did not have dedicated doctor or paramedical staff. The MS, Shillong CH stated (April 2020) that doctors were available for the ICU only on call basis.

While the Department failed to provide specific response regarding reasons for non-availability of ICU service in the three test-checked DHs, our inference is that the State Government have not planned for building infrastructure facilities at the DHs by all these years, despite funds being available from various sources.

Thus, non-availability of dedicated ICU services in other DHs had risked the lives of patients with serious and emergency conditions.

4.4 Operation Theatre Services

Operation Theatre (OT) is an essential service in a DH. IPHS guidelines prescribe OTs for elective major surgery, emergency services and ophthalmology/ ENT (ear, nose and throat) for DHs having a bed strength of 101 to 500. Availability of OT services and number of surgeons available in the test-checked DHs as of March 2019 is shown in the Table below:

Table 4.5: Availability of OTs and Surgeons as on 31 March 2019 in the test-checked DHs

Hospital	Type of surgeries available (No. of Surgeons)			Eye surgeries
	General	ENT	Ortho	
Shillong CH	Yes (3)	Yes (4)	Yes (4)	Yes (4)
Nongpoh CH	Yes(2)	No	No	Yes (1)
Jowai CH	Yes (1)	No	Yes (1)	No (1)
Tura MCH	No	No	No	No

Source: Records of the test-checked DHs.

As can be seen from the above details, Nongpoh CH did not provide ENT and Ortho surgeries during 2014-19; Jowai CH did not provide ENT surgeries (major) during 2014-19. Eye surgeries were not provided despite availability of eye surgeon, due to non-availability of OT staff like Nurses and Cleaner/ Sweeper; since Tura MCH had a bed strength of only 50, it was not mandatory to provide all the above mentioned surgeries. However, since it was meant specifically for women and child healthcare, it did provide C-Section surgeries.

Due to non-availability of OT related services/ apparatus, the DHs of Nongpoh, Jowai and Tura could not provide surgical operations or even minor procedures as part of the treatment process for ENT/ Ortho patients. It was seen that in case of Jowai CH, though they had indented the OT equipment during 2018-19, the same were not provided.

[17] The device is used to cuff around the legs that fill with air and squeeze legs to increase blood flow through the veins of legs and helps prevent blood clots.

The Department, has not given the reasons for the above though called for (May and September 2020).

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

Table 4.6: Ratio of surgeries with safety checklist of OT procedures

Sl. No.	Parameter	Nongpoh CH	Shillong CH*	Tura MCH	Jowai CH
1	Ratio of safety checklist record per total surgeries performed at the OT	Nil	Record not maintained	1:1	1:47
2	Ratio of pre-surgery patient evaluation records per total surgeries performed at the OT	1:1		1:1	1:3
3	Ratio of post-operative notes records per total surgeries performed at the OT	1:1		1:1	Record not maintained

Source: Records of test-checked DHs.

From the Table above, it can be seen that Nongpoh CH and Tura MCH had ensured 100 *per cent* safety checklist in all the three parameters, while Jowai CH failed to ensure the surgical safety checklist and did not even maintain required records. In the case of Shillong CH, records were not maintained against the three parameters.

4.5 Emergency Services

Emergency services in DH are provided by Emergency ward or Emergency Room (ER) which is a medical treatment facility specialising in acute care of patients who come in emergency situation. Due to the unplanned nature of patient attendance, the department provides initial treatment to a broad spectrum of ailments and injuries, some of which may be life threatening and require immediate medical attention. Therefore, IPHS envisages 24x7 operational emergency with dedicated ER in every district hospital.

Emergency room was available in all test-checked DHs, however, the following deficiencies were noted as against IPHS norms:

(i) As per IPHS norms, Emergency should have distinct entry independent of OPD entry to minimise the time lost in giving immediate treatment. Audit noticed that Jowai CH does not have distinct entry and the entry was through a common entrance;

(ii) Emergency shall have dedicated triage, resuscitation and observation area and screens shall be available for privacy. Out of the test-checked DHs, Shillong CH and Tura MCH had all the facilities. Nongpoh CH does not have a dedicated triage whereas Jowai CH did not have any of these facilities;

(iii) Separate provision for examination of rape/sexual assault victim should be made available in the emergency as per guidelines of the Hon'ble Supreme Court. Separate specified room was available at Tura MCH and Nongpoh

CH. In Shillong CH, the victims were referred to Ganesh Das Hospital, Shillong, while Jowai did not have any separate provisions; and

(iv) IPHS require the following equipment, facilities, *etc.* to be available in Emergency room. The availability of facilities in test-checked DHs is shown in the following table:

Table 4.7: Availability of facilities in Emergency Room at DHs.

Sl. No.	Equipment/ Facility	Shillong CH	Jowai CH	Tura MCH	Nongpoh CH
1.	Mobile X-ray	No	No	No	No
2.	ECG	Yes	No	Yes	No
3.	Pulse Oxymeter	Yes	Yes	Yes	Yes
4.	Cardiac Monitor with defibrillator	Yes	No	No	Yes
5.	Multiparameter Monitor	Yes	No	No	Yes
6.	Ventilator	No	No	No	No
7.	Laboratory	Yes	No	No	No
8.	Emergency Beds	Yes	No	Yes	Yes
9.	Side labs/ plaster room	Yes	No	No	No
10.	Minor OT facilities	Yes	No	Yes	No
11.	Duty room for Doctors/ Nurses/ paramedic staff	No	No	No	Yes
12.	Separate waiting area	No	No	Yes	Yes
13.	Public amenities for patients and relatives	Yes	No	No	Yes

Source: Records of the test-checked DH.

From the Table above, it can be seen that Mobile X-ray and Ventilator were not available in any of the DH's emergency room. Availability of equipment/ facilities also varies from DH to DH which ranged from one out of 13 in Jowai CH which was serious state of affairs for a DH whereas in Shillong CH, nine out of 13 equipment were available. The non/ short availability of required facilities/equipment can adversely impact the emergency services of the DHs.

Reasons for non/ short availability of required facilities/ equipment were not stated by the Department, though called for (May and September 2020).

4.6 Absence of Trauma Care Centre

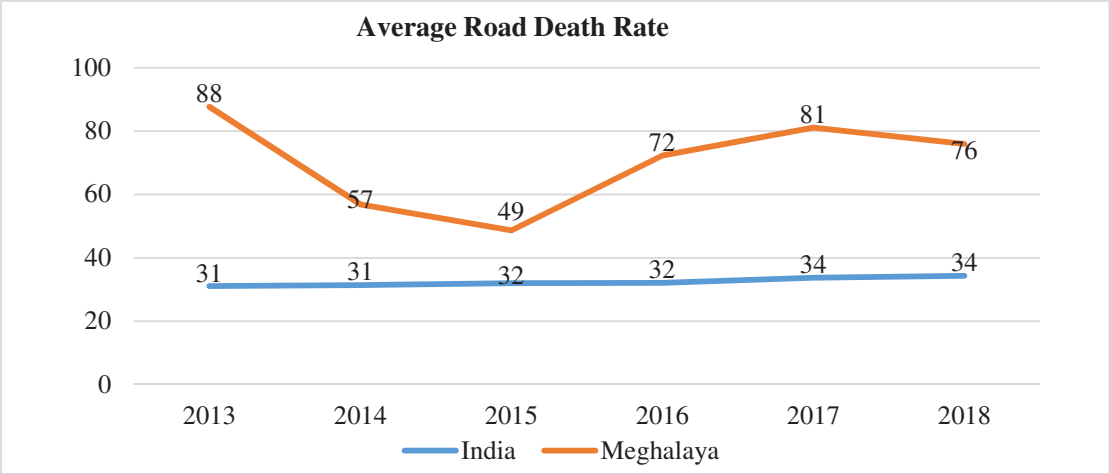
Road traffic deaths and injuries are unpredictable and preventable. It is an accepted strategy of Trauma Care that if basic life support, first aid and replacement of fluids can be arranged within first hour of the injury (the golden hour), lives of many of the accident victims can be saved.

We observed that Trauma care centre was not available in any of the test-checked DHs. In the absence of a functional Trauma care centre in the test-checked DHs, patients with serious injuries were referred out to higher facilities located within and outside the State thus, losing the golden hour, to save the life of the victims.

4.6.1 Delay in completion of Trauma care centre at three DHs

As per National Crime Reports Bureau, Ministry of Home Affairs (MHA), the rate of road/ traffic accidental deaths of Meghalaya during the last five years 2013-18 was always higher than the National average as presented in the following chart:

Chart 4.4



Source: Reports published by National Crime Records Bureau, MHA during 2013-18.

With the objective of bringing down preventable deaths caused by road accidents to 10 *per cent* by developing a pan-India trauma care network, GoI sanctioned[18] in 2016-17 ₹ 18.15 crore for setting up of three Trauma Centres at Shillong CH (₹ 9.25 crore), Nongpoh CH (₹ 4.45 crore) and Tura MCH (₹ 4.45 crore). The idea is to ensure that a designated trauma centre is available at every 100 km, and no trauma patient is transported beyond 50 km.

Audit observed that although construction of the trauma centre was completed (January 2006) at Nongpoh CH, the centre has not been made functional (June 2020) for want of Medical Officer. The construction of trauma centres at Shillong CH and Tura MCH had not even commenced (January 2020), despite funds being sanctioned.

Had the three trauma centres been completed on time and made functional with the required manpower and equipment, lives of many of the accident victims could have been saved and the road accidental death rate of the State could have been minimised.

4.7 Diagnostic Services

Efficient and effective diagnostic services, both radiological and pathological, are amongst the most essential health care facilities for delivering quality treatment to the public based on accurate diagnosis.

4.7.1 Radiology services

The role of radiology is central to disease management for the detection, staging and treatment of diseases. Adequate availability of functional radiology equipment, skilled human resources and consumables are the key requirements for the delivery of quality radiology services.

[18] March 2016 (for Tura CH) and March 2017 (for Shillong and Nongpoh CH).

4.7.1.1 Availability of radiology services in test-checked DHs

Medical imaging equipment, especially X-ray based examinations and ultrasonography are crucial in a variety of medical setting and at all major levels of healthcare.

IPHS prescribed five types of X-ray machines and ultrasonography (USG) as essential services and CT scan and MRI as desirable services to be available at DH. Availability of the equipment in the test-checked DHs was as given in the table below:

Table 4.8: Status of availability of radiology services in the test-checked DHs

Sampled equipment	Utility of the equipment	Availability status
500 M.A. X-ray machine ***(Essential for Shillong CH and desirable for other DHs)***	Provide complete solutions for every application. Ideal for routine examination of chest, extremities, skull and for special investigations including barium, IVP and routine orthopaedic examinations, abdomen and pelvic studies.	Shillong CH and Tura MCH did not have the equipment, only Nongpoh CH and Jowai CH have one each.
60 MA X-ray machine (mobile) ***(Essential for Shillong CH and desirable for other DHs)***		Nongpoh CH and Jowai CH did not have the machine. Only Shillong CH (02) and Jowai CH (01) have the machine.
300 M.A. X-ray machine ***(Essential for all the DHs)***	Used to check fractures, pneumonia, *etc*.	Not available in any of the test-checked DHs.
100 M.A. X-ray machine ***(Essential for all the DHs)***		Nongpoh CH and Jowai CH did not have the machine. Only Tura MCH and Shillong CH have one each, but these were not functional.
Dental X-Ray machine ***(Essential for all the DHs)***		Jowai CH and Tura MCH did not have the machine. Only Shillong CH and Nongpoh CH have one each.
Colour Doppler Ultrasound machine with 4 probes: Abdomen, Paediatric, Soft Parts and Intra-cavitory Ultra Sonogram.***(Essential for all the DHs)***	Used to check for issues with blood flow, such as clots in veins or blockages in arteries, *etc*.	Not available in Nongpoh CH. While the only one available in Tura MCH was not functional.
Mammography Unit (***Essential for Shillong CH and desirable for other DHs)***	The unit is used exclusively for x-ray examination of the breast, with special accessories that allow only the breast to be exposed to the x-rays.	The device is available only in Shillong CH.
MRI 1.5 Tesla ***(Desirable only for Shillong CH)***	Health care professionals use MRI scans to diagnose a variety of conditions, from torn ligaments to tumours. MRIs are very useful for examining the brain and spinal cord.	Available in Shillong CH.
CT-Scan multi slices ***(Desirable for all DHs)***	The most commonly performed CT scan is of the brain - to determine the cause of a stroke, or to assess serious head injuries.	Available only in Shillong CH.

Source: IPHS and Information furnished by the test-checked DHs.

From the Table above, it is evident that essential radiological equipment viz., 500 M.A. X-ray machine, 300 M.A. X-ray machine and Colour Doppler Ultrasound machine were not available at Shillong CH; 300 M.A. X-ray machine, 100 M.A. X-ray machine and Colour Doppler Ultrasound machine were not available at Nongpoh CH; 300 M.A. X-ray machine and Dental X-Ray machine were not available at Tura MCH; and 300

M.A. X-ray machine, 100 M.A. X-ray machine, Dental X-Ray machine and Colour Doppler Ultrasound machine were not available at Jowai CH. Thus, effective decisions on correct diagnosis as well as assessing responses to treatment was not ensured.

4.7.1.2 Frequent breakdown of Imaging equipment

Audit further observed that the X-Ray, USG, CT Scan and MRI machines in Jowai CH, Tura MCH and Shillong CH were frequently out of order during the period covered under Audit as shown in the table below:

Table 4.9: Frequent breakdown of available imaging equipment and reasons thereof

Hospital	Radiology machine	Period for which service/ test was not available	Duration (in days)	Reason for non-availability of service
Jowai CH	X-ray	2/2/14 to 8/5/14	95	Due to non-functioning of Heliophos-D (500 MA)
		28/5/14 to 18/6/14	22	Due to non-functioning of UPS and Computed Radiography System (C.R.)
		29/1/15 to 8/3/15	39	Due to non-functioning of Heliophos-D (500 MA)
		31/5/18 to 2/6/18	03	Reason not recorded
		10/7/18 to 7/9/18	59	Reason not recorded
	USG	Oct 2018 to till date		Due to transfer of the only available Sonologist
Tura MCH	X-ray	March 2017		Machine out of order
		September 2018		Film not available
	USG	February 2015 February 2016 October 2016 April 2018 January 2019		Machine out of order
Shillong CH	USG	26/11/16 to 8/12/16	12	Due to defect in the monitor display
	CT Scan	8/7/16 to 27/8/16	50	Due to failure of IRS component
		4/12/16 to 20/4/17	137	
	MRI	15/10/15 to 6/7/18	994	Due to failure of the MRI magnet

The Table above indicated that proper maintenance of essential equipment was not ensured at Shillong & Jowai CHs and Tura MCH. Thus, due to non-availability of basic diagnostic machines like X-Ray, USG, CT Scan and MRI in the DHs compounded by frequent breakdown of the available machines, the DHs could not provide the required services to patients at all times. Non availability of functioning equipment would compel the patients to undergo for the requisite tests from private clinics at higher rates.

Further scrutiny of records of Shillong CH pertaining to tests conducted during 2018-19 with CT Scan and MRI services revealed that the number of tests conducted was short by 184 (12.96 *per cent*) and 227 (48.61 *per cent*) respectively compared to the total number of patients registered/ recommended by doctors. The reasons for shortfall in number of tests conducted were attributed (January 2020) by Shillong CH to (i) failure on the part of patients to report for examination, (ii) refusal of the patients to undergo test due to Claustrophobia and (iii) derangement as per clinical report (KFT Test Report), which were not suitable for performing the test.

During Exit conference (16 July 2020), the Commissioner & Secretary stated that order will be issued to check and inform the status of all the essential equipment available in all the DHs.

Mention was made in **Paragraph 2.2** of the Report of the Comptroller & Auditor General of India on General, Social and Economic Sectors for the year ended 31 March 2018 regarding avoidable expenditure of ₹ 1.50 crore towards repairs besides depriving the patients the benefit of its service for almost three years due to non-execution of Annual Maintenance Contract (AMC) for maintenance of MRI. Therefore, in addition to trained manpower, the Department should also ensure that AMCs for the imaging equipment are provided to avoid frequent breakdown.

4.7.1.3 Turn-around Time for Radiology Services

Although the definition of timeliness is subjective and depends on the clinical setting, a report can be defined as timely if it is available to the healthcare team at the time it is needed.

Regarding Turn-around Time for Radiology Services, Audit observed the following:

- The average turn-around time of X-ray report in respect of Shillong CH *i.e.* 2880 minutes (48 hours) was considerably higher than 1440 minutes (24 hours) of the other three test-checked DHs;
- In case of USG report, the turn-around time of Tura MCH with 1440 minute (*i.e.* 24 hours) was much higher than the average (400 minutes) of the four test-checked DHs.

4.7.1.4 AERB licences for radiology machines

As per Atomic Energy (Radiation Protection) Rules, 2004, for setting up an X-ray unit and similar other equipment, hospitals were required to obtain license to operate from the Atomic Energy Regulatory Board (AERB).

Contrary to the aforementioned Rules, three DHs *viz.* (i) Nongpoh CH, (ii) Jowai CH and (iii) Tura MCH did not obtain the requisite licence from AERB. Thus, safety implications for patients, staff, public and environment from potential exposure to radiation because of the operation of the equipment, cannot be ruled out.

The Jowai CH and Tura MCH stated (February 2020) that the process for obtaining licences in these hospitals was underway, but did not elucidate the reasons for non-compliance with the Rules *ibid*.

4.7.2 Laboratory Services at test-checked DHs

The District Hospital Laboratory is expected to serve the purpose of public health laboratory and should be able to perform all tests required to diagnose epidemics or important diseases from public health point of view. IPHS envisages that the district hospitals having a capacity of 100 to 500 beds should ensure availability of 97 laboratory test services.

4.7.2.1 Availability of Laboratory Equipment

Audit checked availability of essential Laboratory equipment in the test-checked hospitals through Joint Physical Verification (JPV) with departmental representatives and observed significant shortages, as discussed below:

- Shillong CH has 24 (41 *per cent*) out of 58 prescribed Laboratory equipment available with them. It was further observed that for 10 available equipment, the shortage in quantity ranged from 20 to 80 *per cent*;
- In respect of other three test-checked DHs, 51 numbers of laboratory equipment were prescribed for each hospital. Hospital-wise availability of laboratory equipment and other details are given in the table below:

Table 4.10: Shortage/non-availability of laboratory equipment in the test-checked DHs

Hospital	No. of equipment required as per IPHS	Available equipment (%)	Non-available equipment (%)	No. of equipment available but inadequate (shortfall % in range)
Nongpoh CH	51	26 (51)	25 *(49)*	15 (33-99.9%)
Jowai CH	51	23 (45)	28 *(55)*	10 (33-67%)
Tura MCH	51	24 (47)	27 *(53)*	14 (17-83%)

Source: JPV of Laboratory equipment in the test-checked DH.

Thus, the non-available equipment ranged from 49 to 55 *per cent*, whereas the shortage in available equipment ranged from 17 to 99 *per cent*.

The shortage in availability of Laboratory equipment has resulted in unavailability of laboratory services as discussed in the succeeding paragraph.

4.7.2.2 Availability of Laboratory Services

Regarding laboratory services, the test-checked DHs reported availability of 31 to 63 *per cent* of the 97 laboratory services (**Appendix-II**) as given below:

- Shillong CH confirmed (December 2019) availability of 61 out of 97 services *i.e.* 63 *per cent*;
- Nongpoh CH confirmed (November 2019) availability of 38 out of 97 services *i.e.* 39 *per cent*;
- Jowai CH confirmed (November 2019) availability of 34 out of 97 services *i.e.* 35 *per cent;* and
- Tura MCH confirmed (February 2020) availability of 30 out of 97 services *i.e.* 31 *per cent*.

In order to ascertain the actual availability of the services and to verify the number of tests conducted, Audit has called for the number of tests conducted during 2014-19 against 13 sampled services[19] (12 Bio-chemistry tests and one Haematology test). In this regard, Audit observed that most of the services stated to have been available were

[19] (i) Haemoglobin estimation; (ii) Blood Sugar; (iii) Glycosylated Haemoglobin; (iv) Blood urea, blood cholesterol; (v) serum bilirubin; (vi) Liver function tests; (vii) Kidney function tests; (viii) Lipid Profile; (ix) Blood uric acid; (x) serum calcium; (xi) CSF for protein, sugar; (xii) Thyroid T3 T4 TSH and (xiii) CPk test.

not actually available in three DHs *viz.* (i) Nongpoh CH, (ii) Jowai CH and (iii) Tura MCH as highlighted below:

(i) Nongpoh CH had confirmed availability of 11 services out of the 13 sampled services, against actual availability of only one service. This indicates that 91 *per cent* of the information furnished by Nongpoh CH pertaining to availability of diagnostic services was not factual;

(ii) Tura MCH had confirmed availability of five out of 13 services against actual availability of only two services. This indicates that 60 *per cent* of the information furnished pertaining to availability of diagnostic services was not factual; and

(iii) Jowai CH had confirmed availability of nine out of 13 services against the actual availability of only five. This indicates that 44 *per cent* of the information furnished pertaining to availability of diagnostic services was incorrect.

The above findings indicate that the DHs (except Shillong CH) did not have adequate laboratory equipment to provide comprehensive diagnostic services to the public. It also showed that the hospital authorities were not aware of the actual availability of Laboratory services in the hospitals, depriving patients of the available services.

4.7.2.3 Turn-around Time for Laboratory Services

In order to ascertain the turn-around time of laboratory services, Audit has sampled four services[20] *viz.* Haemoglobin test, CBC, LFT and Bacterial Culture Sensitivity. Audit observations in this regard are given below.

- The average turn-around time of Haemoglobin test report in respect of Shillong CH (35 minute) and Jowai CH (30 minutes) were considerably higher than the average (22 minute) of the four test-checked DHs;
- In case of Complete Blood Counts (CBC) report, the turn-around time of Shillong CH (450 minutes) was considerably higher than the average (210 minutes) of three DHs providing the service; and
- Liver Function Test (LFT) service was provided by only Shillong CH and Jowai CH. The average turn–around time of LFT report in Jowai CH was 150 minutes while the Shillong CH with 450 minutes was 200 *per cent* higher than Jowai CH.

The higher turn-around time of the aforementioned test reports especially in Shillong CH has impacted timely provision of quality healthcare to the patients.

4.8 Shortage of Laboratory Technicians

Laboratory Technicians (LTs) are the key personnel for in-house laboratories and are responsible for taking samples and carrying out all prescribed pathological

[20] (i) Haemoglobin test, (ii) Complete Blood Counts (CBC), (iii) Liver Function test and (iv) Bacterial Culture Sensitivity.

investigations. Audit observed shortage of LTs ranging from 17 to 83 *per cent* in the test-checked DHs with an overall shortage of 69 *per cent* as given in following table.

Table 4.11: Position of LTs in the test-checked DHs as on March 2019

Name of the Hospital	Requirement of LTs as per IPHS norms	Actual Persons-in-Position as of March 2019	Shortage (*per cent*)
Nongpoh CH	6	5	1 (17)
Shillong CH	18	4	14 (78)
Jowai CH	6	1	5 (83)
Tura MCH	6	1	5 (83)
Total:	**36**	**11**	**25 (69)**

Source: Information furnished by test-checked DH.

We observed that only Shillong CH had sent (December 2017) proposal for sanctioning an additional LTs to DHS (MI). However, no additional posts of LTs was sanctioned to Shillong CH as of date of Audit (January 2020). Correspondence regarding the issue of shortage of LTs staff, being raised to the Government by other test-checked DHs was not found on record.

The shortage in Lab Technicians is one of the main reasons for the high turnaround time for testing services in the selected DHs.

4.9 Quality Assurance in Laboratory Services

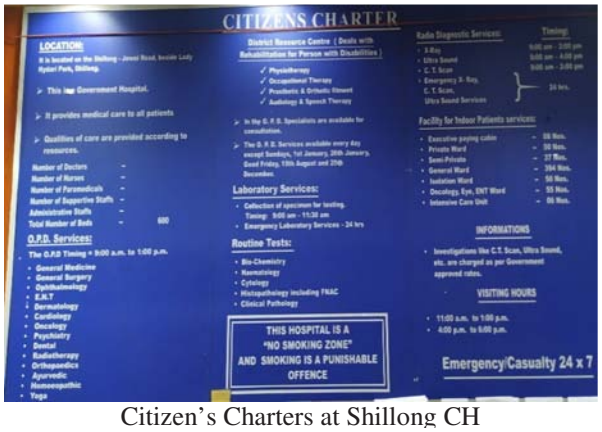
As per IPHS norms, external validation of lab reports is to be done on a regular basis. However, none of the selected hospitals got the lab reports validated by an External Quality Agency (EQA) during 2014-19.

4.10 Patient Rights and Grievance Redressal

IPHS prescribes the requirement to display the Citizen's Charter at OPD and Entrance in local language including patient rights and responsibilities. Further, for effective redressal of grievances of patients, NHM Assessor's Guidebook envisaged a mechanism for receipt of complaints, registration of complaints and disposal of complaints on a first-come-first-serve basis, noting of action taken in respect of complaints in a register, periodic monitoring of system of disposals and follow-up by superior authorities as necessary.

4.10.1 Citizen's Charter

Audit noticed that Citizen's Charters were displayed in all the test-checked hospitals. However, Shillong CH and Nongpoh CH displayed Citizen's Charter only in English and not in local language.



Citizen's Charters at Shillong CH

4.10.2 Free Medical Insurance

Megha Health Insurance Scheme (MHIS) was launched (December 2012) by the State Government to provide health insurance to all the residents of the Meghalaya, excluding State and Central

Government employees. The objective of the scheme was to provide financial aid to all the citizens of the State at the time of hospitalisation and reduce the out-of-pocket expenses of the residents of the State. The MHIS was implemented in a phase manner and currently MHIS Phase IV is on-going. The MHIS-IV is implemented in convergence with **Ayushman Bharat – Pradhan Mantri Jan Arogya Yojana** (PMJAY) which was launched by the Government of India in September 2018.

Under the scheme, beneficiaries can avail free medical treatment in all the empanelled hospitals (both Public and Private) up to a financial limit of ₹ 5.00 lakh per family with no restrictions on family size and age.

There were about 168 empanelled hospitals/ health facilities in the State and about 5.54 lakh beneficiaries (households) were registered under the scheme and a claim of ₹ 235.81 crore has been accepted by the insurance company, since the inception of this scheme.

4.10.3 Grievance Redressal

Audit observed that Grievance redressal cell/ complaint cell was not set up in Shillong CH and Tura MCH as of March 2019. Further, complaint box was available in all the test-checked DHs, however, in absence of Grievance Redressal Committee/Cell at all the hospitals, the manner/ basis of disposal of the complaint/suggestion received, could not be verified. Moreover, patient satisfaction survey was not conducted by Shillong CH, Nongpoh CH and Jowai CH during 2014-19. Tura MCH stated to have conducted the survey, but relevant records like the survey report, recommendations (if any) and follow up action taken, were not furnished to Audit, although called for.

Further, during the joint physical verification, Audit noticed that patients had to stay in the corridors or on the floor due to the constraints of bed/ space as can be evidenced from the following photographs.

Jowai CH: Patients lying on the floor and on extra beds laid in the corridor

Tura MCH: Patients along with attendants/ visitors sitting on the beds and extra beds laid in the corridor

In view of above, Audit observed that patient's rights and grievances were not properly safeguarded and addressed in the test-checked DHs.

4.11 Patient Safety

4.11.1 Firefighting equipment and disaster management plan

National Building Code of India 2016, Part 4, Fire and Life Safety requires that fire extinguishers be installed in every hospital, so that the safety of the patients/ attendants/ visitors and the hospital staff is ensured in case of any fire in the hospital premises. Further, NHM Assessor's Guidebook envisages that in every hospital, Standard Operating Procedure (SOP) should be available and a Disaster Management Committee should be constituted.

Audit observations with regard to fire safety measures taken by the test-checked DHs are as follows:

- Fire safety audit was conducted in February 2017 in all the test-checked DHs. However, recommendations/ suggestions such as (i) installation/ fitting of smoke detectors, (ii) PA system, (iii) fire alarm, *etc.*; made in the fire safety audit reports were not implemented by the hospitals as of date of Audit;
- No Objection Certificate (NOC) from competent Authority (Fire & Emergency Services) required as per rules, were not obtained by any of the test-checked DHs; and
- Adequate number of fire extinguishers were not available in all the test-checked DHs.

In view of above, there was no record of availability of fool proof fire safety measures and hospital infrastructure in any of the test-checked DHs. Thus, a satisfactory assurance of fire safety measures could not be obtained.

Conclusion

In all the test-checked DHs, in-patient services for Accident & Trauma and Burns were not available, while Dialysis and Psychiatry indoor service was available only in Shillong CH and Jowai CH respectively. OT and ICU services were also not available in all the test-checked DHs. The construction of State Spinal Injury Centre sanctioned in 2018 and the Trauma Centre for Shillong CH due for completion by September 2018 did not even commence despite availability of GoI funds. The Diagnostic Services in the test checked hospitals were inadequate to the extent of radiological equipment not being available. The imaging equipment available were frequently non-functional for want of proper maintenance. As regards Laboratory Equipment, in test checked DHs, non-availability of essential equipment ranged from 49 to 55 *per cent* whereas shortages in available equipment ranged from 17 to 99 *per cent*, thereby impacting the availability and timeliness of comprehensive diagnostic services to the public.

Further, fire safety of patients, attendants, medical personnel and the hospital buildings had not been ensured by the Hospital administration. Grievance Redressal Committee/ Cell did not exist in all the hospitals.

Recommendations

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

ii. *OT services be made available in all the DHs with required manpower, equipment and drugs.*

iii. *The availability of round the clock accident and trauma services in DHs needs to be ensured as per the norms for DHs.*

iv. *The quality of diagnostic services which are crucial for patient care and treatment be made comprehensive as per requirements. The State Govt./hospital administration must ensure that available equipment are functional and turnaround time for services is reduced.*

v. *The hospitals may rigorously adhere to the National Building Code 2016 to ensure safety of patients/ attendants/ visitors and the hospital staff from fire incidents. The Hospital administration may also ensure adequate documentation of availability of fire safety measures for verification.*

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