

Chapter III

Post Crash Management

As per 'Manual on National Emergency Life Support' issued (February 2022) by Ministry of Health and Family Welfare, GoI, Emergency Care System extends from care at accident point, through transport and emergency unit care. Pre-hospital care forms the earliest link in the chain of care and is the first avenue for the community to access trained healthcare providers. Efficient pre-hospital system can play a pivotal role in effective utilization of platinum minutes and golden hour in trauma and emergencies. The major benefits of the same are realized, when the timely provisions of care can limit or halt the cascade of events that otherwise quickly leads to death or lifelong disability of patients. Besides, it forms an important component of the armory in tackling mass casualty and disaster incidents. Scrutiny of records revealed following deficiencies in post-crash response management:

3.1 Ambulance Services

It is a well-accepted fact that a patient who receives basic care from trained professionals and is transported to the nearest healthcare facility within 15-20 minutes of an emergency has the greatest chance of survival. Attending the accident victims during the 'Golden Hour'¹ and the 'Platinum Ten Minutes' is vital for providing Emergency Medical Services. It is an essential part of the overall healthcare system as it saves lives by providing care immediately. The GoR, initiated (September 2008) Emergency Response Services popularly known as "108 Ambulance service project" under National Rural Health Mission. It is being run in Public Private Partnership (PPP) mode in the State. At present (May 2025) 1,048 ambulances with life support system are functional under '108' Ambulance Services in the State.

3.1.1 Transportation of accident victims

As per conditions of operation and management of 108 emergency services in Rajasthan, response time for ambulances in Urban, Rural and Desert areas were prescribed as 20, 30 and 40 minutes respectively. Details of ambulance (functional under 108) called/approached, arrival of ambulances at the accident spots, numbers of road accident victims attended and number of road accident victims transported to the nearest hospital are given in the **Table 3.1**.

¹ Golden Hour :- In emergency clinical care, the "Golden Hour" refers to the critical first 60 minutes after a traumatic injury.

Table 3.1: Details of ambulances called/approached, reached at accident spot and road accident victims transported to the nearest hospitals

Year	Number of cases in which ambulance approached/called	Number of cases wherein ambulance reached at accident spots	Number of cases wherein ambulance did not reach at accident spots		Number of cases wherein road accident victims transported to the nearest hospital	
			Number	Per cent	Number	Per cent
2018-19	88,711	84,919	3,792	4.27	63,030	74.22
2019-20	89,086	76,034	13,052	14.65	70,800	93.12
2020-21	64,335	55,312	9,023	14.02	51,905	93.84
2021-22	59,711	51,504	8,207	13.74	47,309	91.85
2022-23	85,905	79,579	6,326	7.36	73,535	92.40
2023-24	91,237	88,679	2,558	2.80	80,833	91.15
2024-25	1,06,905	1,02,971	3,934	3.67	97,045	94.24
Total	5,85,890	5,38,998	46,892	8.00	4,84,457	89.88

Source: Information provided by the Medical & Health Department.

The **Table 3.1** shows that in 92 *per cent* cases ambulances reached at accident spot where as in 46,892 cases (8.00 *per cent*), ambulances did not reach the accident sites despite being called.

Audit also noticed that ambulances were not reached at the accident spots within the stipulated time as shown in the **Table 3.2**.

Table 3.2: Details of cases where the ambulance reached at accident spots beyond the stipulated time

Year	Number of cases where the ambulance reached at accident spots beyond 20 minutes (in Urban Areas)	Number of cases where the ambulance reached at accident spot beyond 30 minutes (in Rural Areas)	Number of cases where the ambulance reached at accident spot beyond 40 minutes (in desert Areas)	Total	Per cent (of cases wherein ambulances reached at accident spots i.e column no. 3 of table 3.1)
2018-19	1,394	2,605	111	4,110	4.84
2019-20	2,078	3,567	161	5,806	7.64
2020-21	1,985	4,074	147	6,206	11.22
2021-22	1,668	3,039	124	4,831	9.38
2022-23	835	1,385	72	2,292	2.88
2023-24	336	482	39	857	1.00
2024-25	126	204	25	355	0.34
Total	8,422	15,356	679	24,457	4.54

Source: Information provided by the Medical and Health Department

The **Table 3.2** indicates that in 95.46 *per cent* cases ambulance reached the accident spot within the stipulated time whereas in 24,457 cases (4.54 *per cent*), ambulances reached the accident sites after the stipulated response time.

Audit further observed that out of 4,84,457 cases wherein road accident victims were transported to the nearest hospital, there were 4,01,614 (82.90 *per cent*) cases where accident victims were transported to the nearest hospital within the golden hour. Whereas, there were 82,843 cases (17.10 *per cent*),

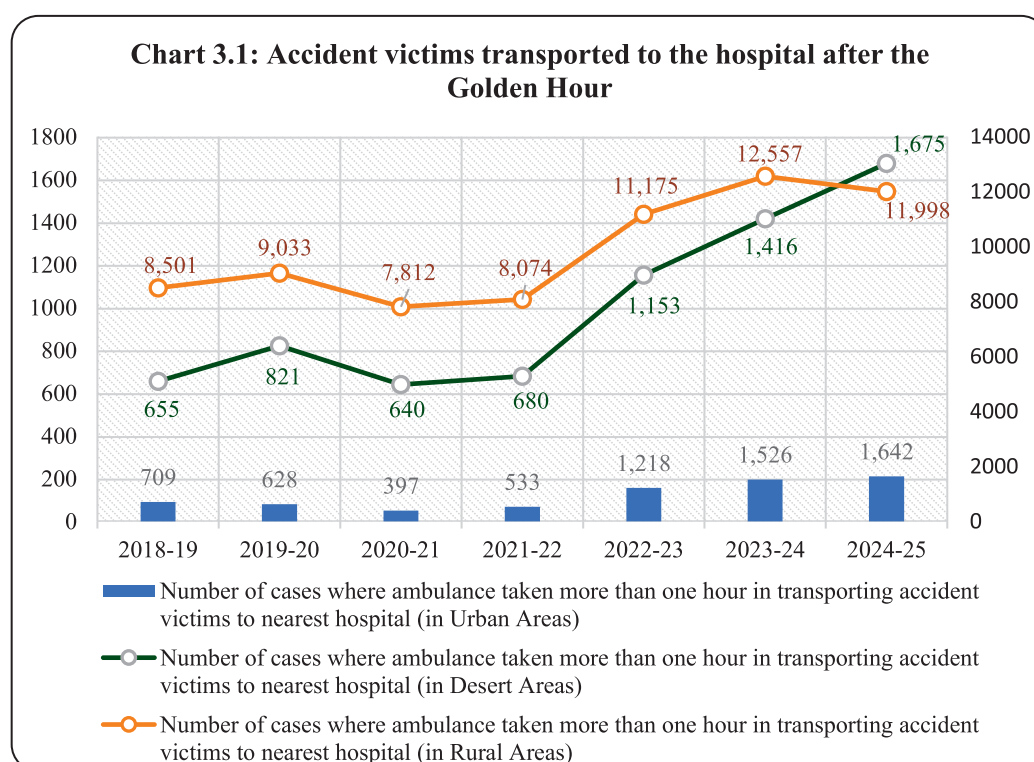
where road accident victims were taken to the nearest hospital after the "golden hour" during the period 2018-19 to 2024-25. The details are shown in **Table 3.3**.

Table 3.3: Details of cases where the road accident victims were transported to nearest hospital within and after golden hour

Year	Total cases wherein road accident victims were transported to nearest hospital	Total cases wherein road accident victims transported to nearest hospital within golden hour	Total cases wherein road accident victims transported to the nearest hospital after golden hour
2018-19	63,030	53,165	9,865
2019-20	70,800	60,318	10,482
2020-21	51,905	43,056	8,849
2021-22	47,309	38,022	9,287
2022-23	73,535	59,989	13,546
2023-24	80,833	65,334	15,499
2024-25	97,045	81,730	15,315
Total	4,84,457	4,01,614	82,843

Source: Information provided by the Medical & Health Department

The **Table 3.3** shows that 80.37 per cent to 85.15 per cent road accident victims were transported to the nearest hospitals within golden hour. Further, area wise bifurcation of accident cases where accident victims were transported to the nearest hospitals after the golden hour is given in **Chart 3.1**.



Source: Information provided by the Medical & Health Department

The **Chart 3.1** shows that 83 *per cent* of cases, where accident victims were transported to the nearest hospitals after the golden hour were pertaining to the rural areas.

The GoR replied (September 2025) that delay in 108 Ambulance response occurred as the nearest ambulances were engaged in other cases, requiring deployment of the next available unit. In rural and desert areas, longer distances between ambulance and caller locations also increased travel time.

3.1.2 Integration of Private and NHAI Ambulances with Government Emergency System

To enhance the outreach of emergency services in the State, the private ambulances and ambulances of NHAI were to be integrated with Government Emergency Services *i.e.* 108.

It was noticed that 130 ambulances of NHAI had been integrated with Government Emergency Services *w.e.f.* February 2025 but with a significant delay. However, private ambulances had not been integrated even after elapse of more than five years of the launching of Road Map 2020.

The GoR replied (September 2025) that the Transport and Road Safety Department had finalized and communicated the rates for different ambulance categories to NHM, Medical & Health Department. Further action on integration was pending with NHM, Medical & Health Department.

Despite the fact that the State consistently ranked 5th and 6th in road accident fatalities during the period 2018 to 2023, the Medical & Health Department delayed the integration of the ambulances of NHAI and was not able to integrate the private ambulances (September 2025).

3.2 Basic Life Support Training Centres

As per the manual on National Emergency Life Support issued (February 2022) by Ministry of Health and Family Welfare, GoI, Basic Life Support (BLS) is the foundation for saving lives after accident. The main objectives of BLS training are to understand chain of survival, to assess the responsiveness of the victim, to perform basic life support in adult, pediatric and pregnant victims, to know how to perform Cardiopulmonary Resuscitation (CPR) and high-quality CPR and its role in survival, *etc.* Further, First Responder Manual developed by 'Jai Prakash Narayan (JPN), Apex Trauma Centre, AIIMS, New Delhi', *inter alia* include the ways to be adopted while taking care of road trauma victims by a first responder.

As per Road Safety Action Plan 2018-20, a BLS Training Centre was to be established at SMS Medical College Trauma Centre in association with JPN Apex Trauma Centre, AIIMS, New Delhi. Further, a total of seven² BLS Training Centres were to be established at all divisional headquarters by 2020.

² Jaipur, Ajmer, Jodhpur, Bikaner, Udaipur, Kota and Bharatpur.

It was observed that BLS Training Centers along with skill labs were established (up to April 2025) in Jaipur, Ajmer and Jodhpur only. Training in Basic Life Support and capacity building was provided to 6,586 and 5072 persons respectively at these Centres.

The remaining four divisional headquarters³ did not have any training centres. As first responders are crucial for providing immediate care to road accident victims before they reach the hospital, the absence of these centres means the planned initiative was not carried out.

The GoR replied (April 2025) that instead of divisional headquarters, now the Department intends to establish BLS Training Centres in 41 districts of the State which would be established in phased manner. In the first phase, funds for nine⁴ BLS Training Centres have been sanctioned from the dedicated Road Safety Fund.

3.3 Trauma Care Policy

With a view to provide Emergency Care and Medical Services for road accident victims, the Rajasthan State Road Safety Policy-2017 stipulates that the Government will make sincere efforts to ensure that all persons involved in road accidents benefitted from speedy, sufficient and effective trauma care and management. Both pre-hospital care and hospital-based injury management shall be provided to crash victims through a comprehensive Trauma Care Policy. The Government would provide and improve sufficient emergency medical service response and steps shall be taken for training human resources and creating faculties. Further, Rajasthan Road Safety Action Plan 2018-20 also envisaged to develop a Trauma Care Policy to facilitate the road accident victims.

Scrutiny of records revealed that Trauma Care Policy was not developed in the State to facilitate the accident victims. The Transport Department replied (August 2023) that instead of a Trauma Care Policy, Rajasthan Accident and Emergency Care Initiative (RAECI) as proposed by Medical & Health Department, had been incorporated in Road Safety Road Map 2020. Thereafter it was intimated (April 2024) that establishment of Mukhyamantri Accident and Emergency Care Initiative (MAECI) was further proposed in place of RAECI, which had still not been fully implemented. However, the detailed scheme document was not provided to audit.

Thus, the State Government had neither finalized the Trauma Care Policy nor implemented the alternate MAECI Scheme. In absence of a robust policy/initiative, planning for trauma care and implementation of various road safety measures could not be ensured. Resultantly the target of reduction of road accident fatalities could not be achieved.

³ Bikaner, Udaipur, Kota and Bharatpur.

⁴ Bharatpur, RUHS Jaipur, Bhilwara, Dungarpur, Pali, Churu, Jhalawar, Ajmer and Udaipur.

The GoR replied (September 2025) that development of Trauma Care Policy had been incorporated in 10 years Road Safety Strategy and Action Plan (2024-33).

3.4 Establishment of Trauma Stabilization Unit/Primary Trauma Centers at existing Health Centers.

In the Road Safety Action Plan 2018-20, it was planned to upgrade existing Community Health Centres (CHCs) as Trauma Stabilization Unit (TSU) during 2018-20 with an aim to provide timely and effective trauma care to all affected by the road accidents, as well as to reduce the number of fatalities in road accidents. Accordingly, the GoR announced in budget speeches (2019-20 to 2021-22) to upgrade 100 CHCs as Trauma Stabilization Unit/ Primary Trauma Centers. These CHCs were identified on the basis of maximum fatality rate in road accidents and minimum 30 kilometers distance from the existing Trauma Centers/District Hospitals.

The Medical Department considered (December 2018) 49 types of equipment⁵, (36 Medical Equipment and 13 General Equipment) (*Appendix-3*) as essential to be placed/equipped in Trauma Stabilization Unit/ Primary Trauma Centre. Based on the proposal of the Medical Department, a total of ₹ 24.80 crore (₹ 2.90 crore) for civil works and ₹ 21.90 crore) for procurement of equipment) was sanctioned (between October 2019 and November 2021) from the Road Safety Fund for civil works and procurement of equipment. Under the civil works the existing emergency rooms were to be renovated and developed as trauma care rooms. It was also decided that deployment of manpower in a TSU/PTC would be ensured as per Indian Public Health Standards (IPHS), norms⁶. IPHS norms, stipulates that four types of specialty services *i.e.* General Surgeon, Physician, Obstetrician & Gynaecologist and Anaesthetist along with other required staff for taking care of emergency cases were essentially required.

It was observed during audit that even after lapse of two to four years of budget announcement, only civil works for upgradation could be completed, whereas medical equipment were pending to be procured and made available to identified TSUs/PTCs. The Transport Department stated that purchase orders for 22 out of 49 equipment had been issued and tender process for remaining equipment was being proceeded through GeM Portal. Regular correspondence with the Medical & Health Department was being done for procurement of equipment. Updated position regarding purchase of equipment was called for, however, specific reason is awaited (June 2025).

⁵ Such as Automated External Defibrillator (AED), OT (Operation Theater) Lighting, Multi Para Monitor, ECG three channel machine, Cardiology High Frequency Machine and Ventilator *etc.*

⁶ IPHS are a set of uniform standards (Published in 2007 under National Health Mission) envisaged to improve the quality of health care delivery in the country. The standards have been used as the reference point for public health care infrastructure planning and upgradation in the States/UTs.

During Joint Physical Inspection of 13 selected TSUs/PTCs, it was found that only nine to thirteen general⁷ types of equipment could be provided to these centres. It was noticed that Rajasthan Medical Services Corporation Limited (RMSCL) did not expedite the process of procuring the equipment. Therefore, other medical equipment essential for life saving of the accident victims were not provided to the TSUs/PTCs.

Audit further noticed that instead of upgradation of existing emergency room other civil works were done which could not be used as TSUs/PTCs and some instances of irregular civil works noticed during joint physical verification are discussed below:

	
In PTC, Jamavaramgarh (Jaipur) and PTC Uniyara, Tonk: A separate room was constructed which was lying unutilised instead of upgradation of existing emergency room.	PTC, Bassi (Jaipur): Aluminum partition work was done in a space adjoining to the emergency room which was being utilized for Chiranjivi Health Scheme Counter.
	
PTC, Reoder (Sirohi): Instead of renovating/upgrading existing emergency room, shed and flooring work was carried out in a separate outside corridor which was not usable for emergency care.	PTC, Baswa (Dausa): The civil work was carried out in a separate room instead of existing emergency room, which was not usable for emergency care.

⁷ Oxygen Regulator, Patient Stretcher trolley, Kidney Tray, Revolving Stool, Digital Thermometer, Wheel Chair, Examination Table, Instrument trolley, Glucometer, Weighing Machine, Nebulizer, B.P Instruments, Stethoscope *etc.*

Further, there was shortage of general surgeon, physician, obstetrician & gynecologist, medical officer and nursing staff ranged between seven *per cent* and 58 *per cent* details are given in the **Appendix-4**.

The GoR replied (September 2025) that civil works for establishing Trauma Stabilization Units/Primary Trauma Centres had been completed. Whereas, out of 49 equipment items, 26 had been procured and the remaining were under procurement by RMSCL. Further, 15 out of 100 CHCs had been upgraded to Level-III Trauma Centres, while the remaining Trauma Stabilization Units/Primary Trauma Centres were functional without upgradation.

3.5 Strengthening of Trauma Centres in Hospitals and Medical Colleges

Road Safety Action Plan 2018-20 envisaged to establish Model Trauma Centre by strengthening the existing trauma centers in six⁸ medical colleges during the period (2018-20). Further, it was also decided in meetings of Road Safety Steering Committee held during 2021-22 and 2022-23 to establish such centers in eight⁹ more hospitals/colleges in phased manner. Thus, it was decided that model trauma centres would be established in 14 hospitals/medical colleges. Out of these, one trauma centre in SMS Medical College, Jaipur had already been established (2018). However, the required approval for establishment of model trauma centre in Kota was not found on record. Thereafter, a total of ₹ 60.27 crore was sanctioned from Road Safety Fund (2018-19 to 2022-23) for civil work and procurement of equipment required for establishment of model trauma centres in 12 hospitals/medical colleges¹⁰ details provided in **Appendix-5**.

It was noticed (May 2025) that out of the 12 Hospitals/Medical Colleges, Model Trauma Centres could be made functional as envisaged only in two Hospitals/ Medical Colleges (Jodhpur and Udaipur), whereas, in three Hospitals/Medical colleges¹¹ neither the civil work nor the procurement of equipment was initiated. Civil works were ongoing but procurement not initiated in Jhalawar, Barmer and Bikaner. In Pali, civil works were completed, while procurement was not initiated. Both civil works and procurement were in progress in Ajmer and Bhilwara.

⁸ Jaipur, Bikaner, Kota, Ajmer, Jodhpur and Udaipur.

⁹ 1. Haribaksh Kanwatiya Hospital, Jaipur, 2. Jhalawar, 3. Bhilwara, 4. Bharatpur, 5. Churu, 6. Pali, 7. Sikar and 8. Barmer.

¹⁰ 1. Haribaksh kanwatia hospital, Jaipur, 2. J.L.N. Medical college, Ajmer, 3. M.D.M. Hospital, Jodhpur, 4. Govt. Medical college, Churu, 5. Govt. Medical college, Pali, 6. S.K. Medical college, Sikar, 7. Govt. Medical college, Barmer, 8. RNT Medical college, Udaipur, 9. S.P. Medical college, Bikaner, 10. Jhalawar Medical college, Jhalawar, 11. Govt. Medical college, Bharatpur, 12. RVRS Medical college, Bhilwara.

¹¹ Bharatpur, Churu and Sikar.

Thus, model trauma centres could not be established in 10 Hospitals/Medical Colleges¹² as envisaged even after lapse of four years of action plan and intended objectives could not be achieved.

3.6 Reporting of accident data

Accurate and comprehensive data collection and reporting is essential for the scientific investigation, analysis and restructuring of road accidents. It serves as a foundation for further research and informed decision-making in improving road safety measures.

The Department adopted (March 2021) the central database system Integrated Road Accident Database (iRAD¹³), an initiative of MoRTH, GoI, which was launched in February 2021, after a lapse of more than four years since the implementation of the State Road Safety Policy. The iRAD system manages data from the Police, Transport, Medical & Health departments and road-owning agencies.

Through iRAD, road accident data is being collected from all over the country. The collected data was analyzed using different data analytics techniques for identification of accident-prone areas and causes of the accidents. The output of analysis is represented in appropriate dashboards, accessible to higher authorities of stakeholder departments and MoRTH. Considering the vast number of application users involving multiple stakeholder departments and their existing infrastructure availability, the iRAD was developed as a hybrid application making it accessible through Mobile devices (Android and IOS) and Web browsers.

According to the iRAD Workflow/User Manual, the process begins with the field officer of the Police Department recording accident data, which includes details such as date and time of the accident, location, vehicles involved, causes, individuals involved, mode of transport used to hospitalize the victim and any delays in hospitalization. This data is then submitted to the Station House Officer (SHO) for review and the registration of a First Investigation Report (FIR). After the FIR is registered, the SHO sends requests to the Transport Department for accident vehicle inspection, the road-owning agency for an inspection of the accident site and the Medical & Health Department for the issuance of necessary medical reports and certificates. The Medical & Health Department was required to record accident-related information simultaneously on the iRAD platform.

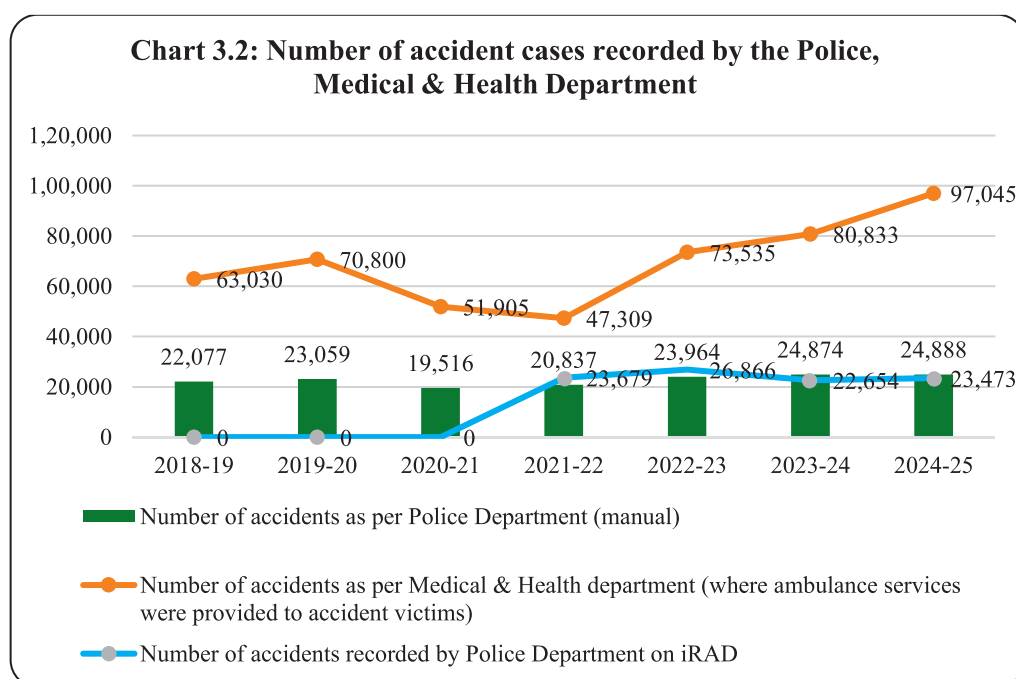
¹² 1. Haribaksh kanwatia hospital, Jaipur, 2. J.L.N. Medical college, Ajmer, 3. Govt. Medical college, Churu, 4. Govt. Medical college, Pali, 5. S.K. Medical college, Sikar, 6. Govt. Medical college, Barmer, 7. S.P. Medical college, Bikaner, 8. Jhalawar medical college, Jhalawar, 9. Govt. Medical college, Bharatpur and 10. RVRS Medical college, Bhilwara.

¹³ The Integrated Road Accident Database (iRAD) Project is an initiative of the Ministry of Road Transport and Highways (MoRTH), Government of India and is funded by World Bank, with the objective to improve road safety in the country.

3.6.1 Difference in Road Accident Data recorded by stakeholder departments

The accident data being utilised by various planning, executive and research agencies, was being maintained by the Police Department prior to commencement of iRAD. After commencement of iRAD, provisions were made to record data at the level of various departments involved in taking care of road accident cases *i.e.* Police Department, Medical & Health Department, Road Owning Departments (Public Works, National Highway Authority of India, *etc.*) and Transport Department.

Scrutiny of information/records provided by Police Department, Medical & Health Department and reports generated from iRAD application revealed that there were significant differences in number of accidents recorded by these departments. The details are given in the **Chart 3.2**.



Source: Information provided by the Police Department, Medical & Health Department, Rajasthan and reports of iRAD.

The data presented in **Chart 3.2** highlights that a total of 1,59,215 accidents cases were registered by Police Department, whereas number of accidents recorded by Medical & Health Department was 4,84,457 wherein the road accident victims were transported through ambulances and admitted to the nearest hospitals during the period 2018-19 to 2024-25. Further, according to data provided by the Police Department, there were 94,563 accidents reported during 2021-22 and 2024-25, whereas the number of accidents recorded on iRAD (by Police Department) was 96,672 during the same period.

Number of accidents according to the Medical & Health Department are three times higher than that was reported by the Police Department, whose data was used to prepare the State Road Safety Action Plans (2018-20, 2024-33), the Road Safety Road Map 2020 and being adopted by MoRTH also. This

underreporting undermines the accuracy of road safety initiatives and calls for reliable and comprehensive data.

The GoR accepted the facts and replied (April and September 2025) that the number of accidents as per records of Police Department were lower as those include only the accident cases where a First Investigation Report (FIR) was registered. Additionally, some patients directly approach private hospitals for treatment after accidents and these hospitals were not integrated with iRAD. With the integration of iRAD with Crime and Criminal Tracking Network and Systems of Police and Treatment Management System of Medical & Health, the gap would be eliminated.

3.6.2 Pendency in uploading various reports on iRAD

As per iRAD manual, after registering the FIR, the SHO sends requests to the Transport Department for accident vehicle inspection, the road-owning agency for an inspection of the accident site and the Medical & Health Department for the issuance of necessary medical reports and certificates.

It was noticed that various reports requested by the Police Department during the years 2021 to 2024 were also pending for uploading on iRAD with the Medical & Health Department, Road Owning Agencies and Transport Department. The details are shown in the **Table 3.4**

Table 3.4: Inspection Requests: Received and Pendency for uploading on iRAD during 2021-24

Name of Department	Name of reports	Total			
		Request received	Report completed	Pending	Pending in percentage
Medical & Health	Postmortem report	126	1	125	99.20
	Drunkenness report	186	0	186	100
Road owning agencies	Road inspection reports	2,412	1747	665	27.57
Transport	Vehicle inspection report	8,216	7,297	919	11.19
Total		10,940	9,045	1,895	17.32

Source: Reports generated from iRAD portal.

Table 3.4 shows significant pendency in processing accident-related requests. All requests for drunkenness test reports and 99.20 *per cent* of postmortem reports remained pending with the Medical & Health Department for uploading on iRAD. Additionally, 27.57 *per cent* of road inspection requests were pending with road-owning agencies, while 11.19 *per cent* of vehicle inspection requests were pending with the Transport Department. These delays hindered the timely and accurate availability of critical information, such as road conditions, vehicle fitness, driver intoxication and victim hospitalization details, *etc.*

Reasons for not recording the accident data by the Medical & Health Department on iRAD and pendency with respect to various reports were called

for (August 2024), however the same was not provided to audit (September 2025).

The GoR accepted the facts and replied (April 2025) that regular efforts were being made to strengthen iRAD, improve quality of data recorded and use of iRAD data for enforcement, identification of black spots, road inspections, policy making, *etc.* It was further stated (September 2025) that State and District Rollout Managers were appointed and regular trainings were conducted for iRAD implementation. Data entry by hospitals/trauma centres was limited due to engagement of their staff in patient care.

Conclusion

Post-crash management is a vital element of road safety aimed at reducing fatalities and disabilities resulting from road accidents. Audit examination revealed that although the State Government has undertaken several initiatives, including the 108 Ambulance Service, implementation of iRAD and establishment of Trauma Stabilization Units, systemic deficiencies continue to impede effective emergency response.

In 46,892 cases (8.00 *per cent*), ambulances did not reach the accident sites despite being called whereas in 24,457 cases (4.54 *per cent*), ambulances reached the accident sites after the stipulated response time. There were 82,843 cases (17.10 *per cent*), where in road accident victims were taken to the nearest hospital after the "golden hour".

Delays in ambulance response, and incomplete integration of private and NHAI ambulances have limited the efficiency of emergency medical services. Non-Establishment of Basic Life Support Training Centres, Trauma Stabilization Units and Model Trauma Centres and shortages of medical staff leads to inadequate infrastructure required for post crash management.

Discrepancies in accident data among stakeholder departments and delays in uploading reports on the iRAD platform have weakened the reliability of data which is critical for decision-making.

Recommendations

The Government/Department may consider to:

- 1. Deploy additional ambulances to ensure prompt transportation of accident victims to the nearest hospitals with in the shortest possible time.*
- 2. Ensure accuracy in recording of accident data in iRAD by all departments to generate reliable and comprehensive data.*