3.2.2 Financial Implication

Ministry of Electronics and Information Technology released the entire GoI contribution of ₹10.20 crore for the implementation of e-HMS with Supply Chain Management (SCM), on the condition that State Government meets future financial outlay. Of the released amount,

- Rupees 5.72 crore was paid to CDAC for provision of software and training. A further amount of ₹3.44 crore was due to it as of May 2019, for providing facility management services and other components.
- Rupees 4.48 crore was spent on hardware and networks (procured in June 2015) for implementation of pilot project in three hospitals and SCM. Of this, ₹0.65 crore worth hardware equipment was kept idle due to non-utilisation of all modules.

3.2.3 Conclusion

The e-HMS pilot project has highlighted major issues in electronic management of medical data. Certain Modules of e-HMS lacked validation controls and accepted incorrect data input. The inability/reluctance of hospital staff to capture real-time data coupled with simultaneous continuance of manual processes defeated the envisaged objective of e-HMS. Though the pilot project has been live since May 2016, the problems have not been resolved. The State wide roll out of the system has also not been implemented.

The matter was reported to Government in September 2019; reply is awaited (September 2020).

Health, Medical and Family Welfare Department

(Telangana State Medical Services & Infrastructure Development Corporation)

3.3 Maintenance of Bio-medical Equipment in the State

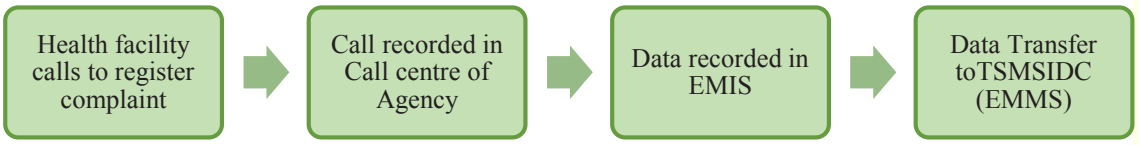
A third party service provider, who was entrusted with the management and maintenance of bio-medical equipment by the State Government, failed to meet the envisaged service levels, impacting critical medical services in the hospitals adversely

Government of India approved an amount of ₹20 crore to Telangana towards maintenance of Bio-medical Equipment in the hospitals under the National Health Mission. Maintenance of Bio-medical Equipment in the hospitals is an initiative of the Union Ministry of Health and Family Welfare, to provide support to State Governments for comprehensive maintenance of medical equipment in all public health facilities to improve the functionality and life of equipment, simultaneously improve the quality of healthcare services and reduce the cost of medicare.

With the approval of the State Government (July 2016) the Telangana State Medical Services & Infrastructure Development Corporation (TSMSIDC) outsourced (June 2017) the maintenance of medical equipment to an Agency (following a competitive bidding process) for a period of five years. The Agency was to provide preventive and corrective maintenance as per the stipulated levels of service, failing which, penalties were to be imposed. The Agency was also to co-ordinate with the manufacturers of medical equipment with regard to warranties, annual maintenance contracts etc.

The Agency mapped all the equipment (with a delay of 12 months) to the facility in which it was located. A web based application 'Equipment Management Information System (EMIS)' was used to record complaints of equipment breakdown and their resolution.

Figure-3.1: Process Flow



The EMIS was integrated with Equipment Maintenance and Management System (EMMS) of TSMSIDC. Audit examined (February 2019) the records relating to the implementation of the contract with the Agency and analysed the data in EMMS data for the period from October 2017 to June 2019. Resultant audit findings are discussed below.

3.3.1 Timeliness in resolution

The contract stipulated a maximum limit of seven days for resolution of a complaint registered through a call. Audit data analysis (Table-3.4) showed that nearly 25 *per cent* of the complaints on critical and lifesaving equipment and 21 *per cent* of the complaints on other equipment were not resolved on time.

Table-3.4: Resolution of complaints

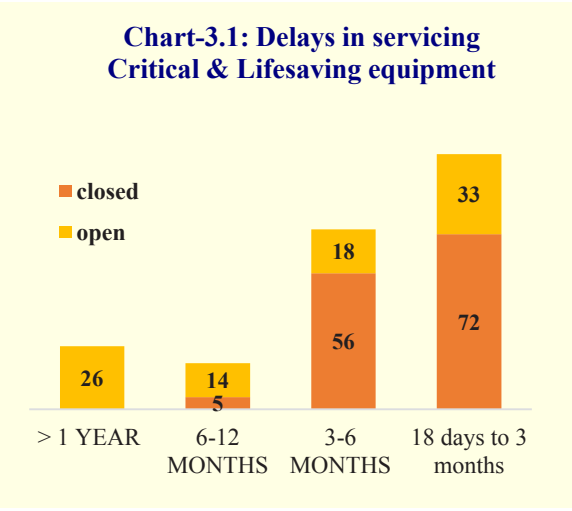
Under Agency Responsibility	Total complaints	Complaints closed within 7 days	Complaints closed beyond 7 days (*per cent* of total complaints)	Complaints open beyond 7 days (*per cent* of total complaints)
Critical & Life Saving Equipment[10]	1,001	748	159 (16)	94 (9)
Other Equipment	4,516	3,568	592 (13)	356 (8)

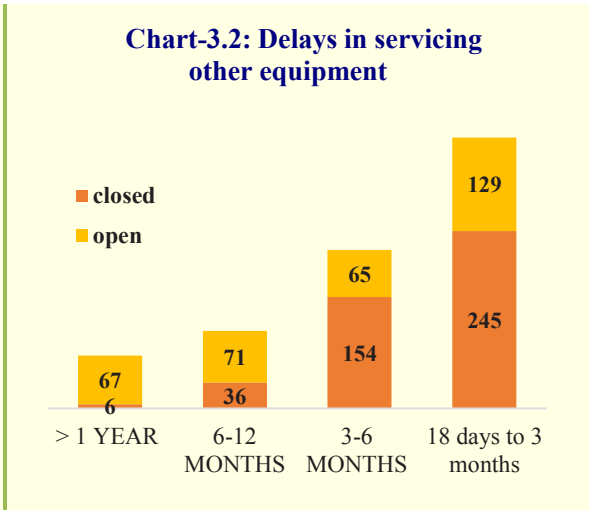
***Source**: Analysis of EMMS data furnished by TSMSIDC*

The program guidelines noted that a continuous downtime of 18 days[11] for lifesaving equipment could be catastrophic for patient care. Audit found delays beyond this limit in 133 closed and 91 open complaints (Charts below) in servicing critical and lifesaving equipment. In respect of other equipment, there were delays beyond this limit in 441 closed and 332 open complaints.

[10] The tender agreement condition no. 5.2.29 categorises 5 equipment ECG Machine, Ventilator, Radiant Warmer, Defibrillator, Phototherapy unit as 'lifesaving' and the Revised maintenance of Bio-medical equipment in hospitals guidelines categorises 18 other equipment as 'critical'

[11] Five *per cent* downtime*365 days





Source: *Call data furnished by TSMSIDC*

The Agency attributed (November 2018) the prolonged downtime of equipment to lack of service support from the manufacturers/vendors, non-availability of spare parts due to obsolescence/age of equipment, etc. However, the agreement made it obligatory on the Agency to establish a well-equipped service network with adequate staffing for resolving/ fixing of the faults.

Government replied (December 2019) that the Superintendents of the Hospitals had complained that the Agency was not attending to the maintenance work and complaints promptly. They also reported that the repairs were not satisfactory as the equipment was being handled by third party service providers instead of Original Equipment Manufacturers (OEM), which resulted in inferior and substandard quality of repair works.

3.3.2 Provision of stand-by equipment

The Agency was required to provide stand-by equipment at the health facility in case of breakdown of critical and lifesaving equipment. This condition was not complied with by the Agency in any of the hospitals. TSMSIDC issued show cause notice (March 2019) belatedly to the Agency for non-compliance with contractual obligations; the Agency in a communication (June 2019) addressed to the TSMSIDC stated that, the issues relating to the stand-by equipment would be resolved once the payment from TSMSIDC was cleared/streamlined.

3.3.3 Maintenance of equipment under existing AMC/Warranty

Upon signing of the agreement, the existing maintenance contracts like Annual Maintenance Contract (AMC), Comprehensive Maintenance Contract (CMC)/Spares Agreement or under warranty were not to be extended and on closure of these contracts, such equipment were to be maintained by the Agency. Further, the Agency was to administer the contract for medical equipment already in AMC/CMC; for those under warranty, the Agency was to administer all maintenance activities. Audit examination showed that the agency could not ensure the service in respect of those equipment which were under AMC/warranty. One of the reasons for poor response from AMC agencies was because their past dues had not been cleared by the Hospitals.

Audit analysis (Table-3.5) showed that nearly 26 *per cent* of the complaints on critical and lifesaving equipment and 31 *per cent* of the complaints on other equipment were not resolved on time.

Table-3.5: Resolution of complaints in respect of equipment under AMC/CMC

Under AMC/CMC/ Warranty	Total complaints	Complaints closed within 7 days	Complaints closed beyond 7 days (*per cent* of total complaints)	Complaints open (*per cent* of total complaints)
Other Equipment	805	548	206 (25)	51 (6)
Critical & Life Saving Equipment	102	74	21 (20)	7 (6)

***Source**: Analysis of EMMS data furnished by TSMSIDC*

3.3.4 Staff deployment by the Agency

The agreement provided for deployment of Agency staff at the hospitals. These included one Bio-medical Engineer (BME) for hospital bed strength more than 200 beds and 1-3 technical staff (TS) tasked with the responsibility of attending to the complaints registered by concerned Hospitals (user at the facility). In addition to this, one mobile team was to cater to the needs of medical centres (CHCs and PHCs) in each of the 10 districts.

Audit found a deficit in deployment of staff of 10 BMEs (37 *per cent*) and of 82 TS (54 *per cent*) as detailed in **Table-3.6**.

Table-3.6: Details of Staff deployment by the Agency

Sl. No	Hospital type	No. of hospitals	Staff required as per tender condition			Staff deployed by Agency			Staff deficit		
			BME	Technical staff	Total	BME	Technical staff	Total	BME	Technical staff	Total
1	Teaching Hospitals	21	21	38	59	9	19	28	12	19	31
2	District Hospitals	6	6	12	18	2	5	7	4	7	11
3	Area Hospitals	31	0	62	62	6	6	12	-6	56	50
Total No. of Employees			**27**	**112**	**139**	**17**	**30**	**47**	**10**	**82**	**92**

***Source**: Information furnished in Government response*

Government stated that the shortfall in deployment of Bio-medical Engineers and Technical staff as per tender clause 5.2.7 were brought to the notice of the Agency through show cause notices (June 2018). The Agency had not complied with the tender conditions.

3.3.5 Inspections

The program guidelines envisaged surprise visits by TSMSIDC for monitoring the Agency's services in the hospitals. However, TSMSIDC inspected the facilities only once in February 2019 in Osmania General Hospital after repeated complaints by the Superintendent.

3.3.6 Payments to the Agency in respect of the contract

As per the contract with the Agency, payments are to be made @ 5.74 *per cent* of asset value as ascertained every quarter mutually agreed by the TSMSIDC and the Agency. Government in its reply (December 2019) stated that the Asset Value was finally agreed upon (October 2018) as ₹157.66 crore by both the parties. Accordingly, a sum of ₹six crore was paid to the Agency during the period September 2017 to September 2018 towards maintenance of equipment. Although the amount payable to the Agency as of August 2019 was ₹19.28 crore[12], TSMSIDC had levied a penalty[13] of ₹12.60 crore (as on 20 August 2019) against the Agency for not fulfilling the obligations and services as per provisions of the agreement. TSMSIDC informed that all further payments were stopped and that the penalty would be adjusted against pending payments.

3.3.7 Cancellation of the Contract

Since the Agency had not fulfilled its obligations under the contract, Government after careful examination accorded (December 2019) permission to TSMSIDC for termination of the contract. The contract with the Agency had been terminated (December 2019) duly blacklisting the Agency for a period of three years. Government had however, not furnished the future arrangements for maintenance of the equipment that were earlier under the agency.

3.3.8 Conclusion

Maintenance of critical equipment was not ensured on time and to the envisaged service levels by the third party service providing Agency, impacting critical medical services in the hospitals. The objective of the program to ensure uninterrupted services from bio-medical equipment, was not achieved due to poor service delivery from the Agency. Despite the Agency's poor service levels, Government gave the Agency a long rope and terminated the contract only in December 2019.

[12] Quarter 1 to Quarter 7 @ ₹2.67 crore (Asset Value ₹157.66 @ 5.74% for each quarter plus 18% of service charges); Quarter 8 @ ₹59.32 lakh

[13] Agreement provided for levy of Penalty Charges: ₹300 for assets worth below ₹10,000, ₹500 for assets worth below ₹one lakh, ₹1,000 for assets worth below ₹10 lakh; ₹3,000 for assets worth above ₹10 lakh for not confirming to the obligations and services as per provisions of the Agreement