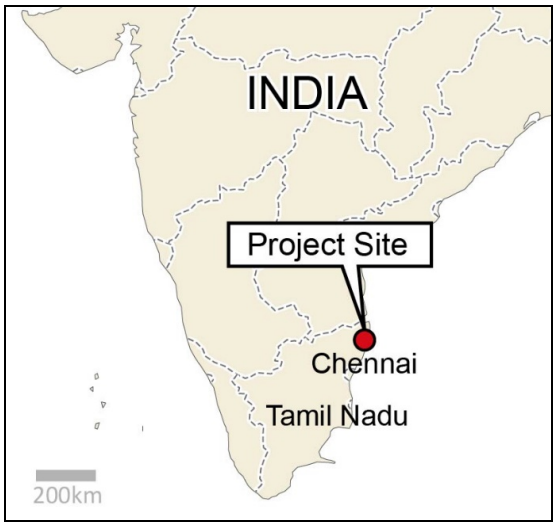
FY 2019 Simplified Ex-Post Evaluation Report of Japanese Grant Aid Project

External Evaluator: Miho Kawahatsu OPMAC Corporation (September 2020)
Duration of the Study: October 2019-September 2020
Duration of the Field Study: January 19, 2020-February 1, 2020

Country Name	The Project for Improvement of the Institute of Child Health and Hospital for Children, Chennai
India	



Project Site

Outpatient building constructed by the project

I. Project Outline

Background	As of 2000, the infant mortality rate in India was 64 per 1000 live births and the under-five mortality rate was 87 per 1000 live births; by 2011, these numbers had decreased to 47 and 61 per 1,000 live births respectively. Despite the significant improvement in these health indices during this time, the challenges remained unchanged and considerable effort was still required to achieve the Millennium Development Goals (MDGs) by 2015: 26.27 and 42 respectively. *The 12th Five Year Plan* of the Government of India (2012-2017) focused on the health sector and strived to provide quality medical services for low-income groups in the urban areas to ensure a broader coverage of health service provision. Under the circumstances, the project targeted the Institute of Child Health and Hospital for Children (ICH), as it was regarded as the top referral public sector hospital for pediatric care in the State of Tamil Nadu; prior to project implementation, it admitted a considerable number of outpatients - up to 2,000 to 2,500 per day. Moreover, as an affiliate hospital of the Madras Medical College (MMC), the ICH also served as a top medical education institute. However, the clinic functions were physically dispersed in various buildings due to infill extensions to accommodate the ever-increasing demand for specialized care. The ICH was therefore unable to fully provide quality care or to offer an efficient learning environment for clinical skills in the existing buildings at the time.			
Objectives of the Project	To enhance the capacity of the outpatient services provision and its educational function in developing clinical skills for the medical personnel in the Institute of Child Health and Hospital for Children (ICH), by constructing an outpatient building and procuring necessary medical equipment in the ICH of Chennai, Tamil Nadu, thereby contributing to the improvement in the health status of children in Tamil Nadu and, in the broader sense, in South India.			
Contents of the Project (Actual)	1. Project Site: Chennai, Tamil Nadu 2. Japanese side (1) Construction Work Construction of a new outpatient building (four-story with the basement, of reinforced concrete) (2) Procurement of equipment Procurement of Medical equipment (Ultrasound scanner, Endoscopes, Digital X-ray unit, Transport incubator, EMG, etc. total of 65 items) 3. Indian side: (1) Construction work 1) Demolition and removal of existing buildings and relocation of the boiler on the project site 2) Demolition and removal of concrete pavement and fences etc. on the project site 3) Setting up utilities on the project site 4) Construction of necessary fences, gates, and vegetation 5) Procurement of necessary furniture and fixtures (2) Procurement of equipment 1) Preparation of air-conditioned environment for installed equipment 2) Procurement of basic medical equipment and furniture (examination table, desk, and chair, etc.)			
Project Period	E/N Date	January 25, 2014	Completion Date	September 30, 2016 (date of handover)
	G/A Date	February 7, 2014		

Project Cost	E/N Grant Limit / G/A Grant Limit: 1,495 million yen, Actual Grant Amount: 1,064 million yen
Executing Agency	Government of Tamil Nadu / the Institute of Child Health and Hospital for Children (ICH)
Contracted Agencies	Main Contractor(s): Fujita Corporation Main Consultant(s): Yokogawa Architects & Engineers Inc., Yamashita Sekkei Inc., Binko International Ltd. (JV) Procurement Agent: Sirius Corporation

II. Result of the Evaluation

Summary

This project aimed to enhance the capacity of the outpatient services provision and the educational function to develop clinical skills for medical personnel in the ICH, Chennai, by the construction of the outpatient building and procurement of medical equipment, thereby contributing to the improvement in the health status of children in Tamil Nadu and, in a broader sense, in South India. The project was consistent with the development policy, development needs of India and the Japanese ODA policy at the time of the ex-ante evaluation. Thus, the relevance of the project is high. During the course of implementation, although the project cost was within the plan, the project period exceeded the plan. Therefore, efficiency is fair. As for project effects, enhancement of medical services for the patient and educational environments were realized, and the newly constructed facilities and procured equipment were confirmed as being fully utilized in the ICH. Also, the number of ultrasonographic and X-ray examinations conducted in response to ever-increasing outpatients and critical care patients signified that the ICH was now capable of providing better outpatient services and that the project objectives were fully attained. Furthermore, the educational environment had improved in terms of physical capacity to receive more trainees and to provide quality medical training and hands-on practical experience using sophisticated medical equipment, notably in emergency medicine. In terms of impact, the ICH served the health status of the target child population in South India and data collected confirmed that the cure rate had improved, and that in-hospital mortality was reduced. The under-five mortality rate of Tamil Nadu had improved steadily from 2010 to 2017, and in 2017, was less than half of the national average. Therefore, the effectiveness and impact of the project are high. Regarding the operation and maintenance of the procured equipment, the Government of Tamil Nadu and the ICH established that the O&M activities would be managed periodically through public funding. Although a systematic budgetary update was needed for some medical equipment, no major problems were observed in terms of the institutional, technical, financial aspects, and the status of operation and maintenance. Therefore, sustainability is high.

Considering all of the above points, this project is evaluated to be highly satisfactory.

Overall Rating[1]	A	Relevance	③[2]	Effectiveness & Impact	③	Efficiency	②	Sustainability	③

< Special Perspectives Considered in the Ex-Post Evaluation>

The project aimed to improve the capacity of outpatient service provision and the educational function of the ICH. To minimize the traffic of outpatients, the outpatient building was designed and constructed based on a layout that arranged those departments with interrelated disease areas together. The Emergency Room (ER) was also placed on the first floor of the outpatient building, to secure a wider space and to shorten the patient transportation time compared to that in the previous setting. Therefore, in addition to medical services for general outpatients, the benefits to the department of emergency medicine, such as the capacity to provide services for critical care patients, were to be included in the ex-post evaluation study. It should be noted that the project procured not only the medical equipment necessary for a general outpatient practice, but also medical devices suited for the emergency room, such as mobile X-ray and ultrasonography (USG). Furthermore, it also procured various devices for clinical tests at labs (biochemistry, pathology, bacteriology). And it was intended to meet various diagnostic needs of a wide variety of patients through the provision of testing devices such as EEG, EMG, as well as a hemodialysis machine, all of which were used for inpatients as well. As this ex-post evaluation was to verify the effects of the medical equipment and devices procured by the project, it is thus imperative to confirm the improvement of the capacity to provide medical services not only for outpatients but also inpatients and critical care patients as well.

1 Relevance (Rating: ③ High)

<Consistency with the Development Policy of India at the Time of the Ex-Ante Evaluation>

The project was consistent with the development policy of India as well as the Government of Tamil Nadu at the time of the ex-ante evaluation. In *the 12th Five Year Plan* (2012-2017), support for maternal and child health was one of the major thrusts to promote the quality of medical care services in the urban areas in India. Furthermore, *the Vision Tamil Nadu 2023 -Strategic Plan for Infrastructure Development in Tamil Nadu* (2012 and 2014) issued by the Government of Tamil Nadu also aimed to markedly improve the health indicators to surpass the national average through reinforcement of tertiary level health facilities.

<Consistency with the Development Needs of India at the Time of the Ex-Ante Evaluation>

The project was consistent with India's development needs at the time of the ex-ante evaluation, particularly in the state of Tamil Nadu and the region of South India. Even before project implementation, the ICH provided free specialized medical services at the tertiary level to the poor people in Tamil Nadu and neighboring states. In 2011, it was estimated that 72 million children were living in Tamil Nadu and 178 million children in neighboring states (Andhra Pradesh, Karnataka, Kerala). These children were the intended beneficiaries of the project, and so there was a palpable need for the ICH to upgrade the quality of the facility as a tertiary care pediatric hospital, to respond to the medical needs of the children residing in the region.

[1] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

[2] ③: High, ②: Fair, ①: Low

<Consistency with Japan's ODA Policy at the Time of the Ex-Ante Evaluation>

The project was consistent with Japan's ODA policy for India at the time of the ex-ante evaluation. *Country Assistance Program for India* (2006) positioned health and sanitation as one of the priority areas in "Improvement of Poverty and Environmental Issues." It stated that it is considered effective to assist in the establishment of health care infrastructure, in which the construction of facilities and installation of equipment was implemented alongside the capacity development of health workers.

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact (Rating: ③ High)

<Effectiveness>

The objective of the project was achieved in terms of the enhancement of the capacity of outpatient service provision and its educational function in the ICH.

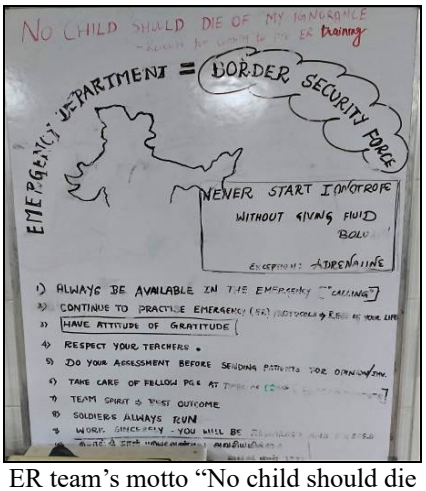
X-ray image checked at the department of radiology

The quantitative effect was considered to have been achieved using two operation indicators: the number of ultrasonographic examinations; and the number of X-ray examinations significantly exceeded the target as shown in Table 1. These were driven in parallel by the increase in demand from patients actualized for an accurate and immediate diagnosis. Also, it was conceivable to explicate the achievement that there was a considerable increase in outpatients and critical care patients, and the actual working hours of the outpatient building was longer than initially assumed during the time. At the time of the ex-ante evaluation, the target value for each indicator was calculated by adding 10% over the maximum number of patients that could be examined within 4 hours per day. However, the field survey confirmed that although the nominal consultation time was three and a half hours in the outpatient building, the actual consultation time was six hours. It was also confirmed that the ER was operating 24 hours a day. Furthermore, this can be also corroborated by the actual number of X-ray examinations; mobile X-ray device procured by the project was recognized eminently serviceable to respond to the time-sensitive situation in the ER. With regards to the staffing needs for image diagnosis, the number of medical personnel assigned to the department of radiology increased to 16 as planned, to allow for the increase in the number of patients seen. For this reason, there was no exorbitant increase in workload per staff member noted, despite the significant increase in image diagnosis.

The intended qualitative effects of the project were originally assumed as follows: 1) satisfaction of patients; 2) improvement in the motivation of medical staff at the ICH; and 3) improvement in the satisfaction of residents with the educational environment. Regarding the first point, the satisfaction of patients; the survey had not been conducted by the ICH to be a basic reference point, and therefore a statistically significant comparison study at the ex-post evaluation was not possible. So that it was inferred based on the analysis of "improvement in capacities of service provision for patients." Also, the third point, the level of satisfaction of residents, etc. was also examined in the context of "improvement of the education environment as a clinical education institution," with surveyed opinions of stakeholders in the hospital. The second point, the motivation of medical staff at the ICH, was surmised and described in "improvement of the education environment as a clinical education institution" based on the results of the field survey, as it was precisely observed in medical students and residents. The intended qualitative effects are discussed below and are deemed to have been fully realized at the time of the ex-post evaluation.

[Improvement in Capacities of Service Provision for Patients]

Regarding the improvement in the quality of medical services, this was first verified in the track record, which showed whether more patients were benefitting from the medical services. As shown in Table 2 below, the annual number of patients of all types kept increasing since project completion in 2016. As mentioned above, the emergency medical service, in particular, was to be expanded by the project. A notable increase in the number of critical care patients indicates that more patients benefitted from the medical services after project completion.



ER team's motto "No child should die of my ignorance"

The field survey confirmed that the outpatient building was constructed with the emergency department on the first floor. This had a well-ventilated ceiling and a slope to the top floor that enabled patients to be transported on a stretcher to the upper floors. The universal-designed building was suited for a hospital traffic line to alleviate unwanted congestion caused by patients with various diseases and their families. It was also confirmed that the ICH perceived that it enabled them to accommodate many more patients with various distinctive requirements within the medical practices compared to before the project.

Furthermore, the ICH recognized that the improvement of diagnostic capacities through the procurement of diagnostic medical equipment contributed to the improvement of the quality of basic medical services. The ICH had constituted the Medical Audit Committee, a group of medical officers tasked with rigorously assessing medical records to evaluate the quality of the medical care rendered to patients. Medical records were checked regularly by the committee, to ensure that they indicated a correct diagnosis and to verify whether the warranted medical treatment had been given. Concerned medical officers are made aware of the common issue of the ICH shared through discussions of the committee from many angles. Based on all survey results, including hearings from each department in the given context above, the ICH perceived that their diagnostic performance had notably improved and had enhanced the quality of treatment as it had targeted to accommodate the larger number of patients seen (see data shown in <Impact>).

It can be inferred that the capacities for medical service provision for patients had improved from various aspects, including the confidence of patients and their families in the ICH, which had increased along with their satisfaction level.

[Improvement of the Education Environment as a Clinical Education Institution]

The project improved the clinical education environment and therefore it was inferred that it also contributed to enhancing the satisfaction of residents, etc. The space for educational purposes (classrooms, etc.) was duly increased and this allowed for a greater capacity to provide even more opportunities for medical students, trainees, and residents to experience hands-on practical experiences of using the newly acquired medical equipment. As an affiliate hospital of the Madras Medical College, the ICH has annually received a considerable number of medical trainees (230 persons), medical students (250 persons), and residents (52 persons) from Madras Medical College for various clinical training before the project; it was perceived that the project enabled them to train effectively in a better educational environment in the hospital. Since 2018, the ICH also started providing Pediatric Emergency Medicine Courses to train medical personnel from district headquarter hospitals and several medical colleges, thereby contributing further to the enhancement of medical education. Moreover, aligned with the state policy to further enhance the healthcare sector, the ICH became capable of receiving more residents from outside hospitals so that they could be exposed to state-of-the-art pediatrics medicine and practice. It admitted over 400 persons during the year 2019.

It is considered that the enhancement in the training and educational environment also contributed to the increased motivation of the medical staff in the ICH. In order to improve medical services, it is essential to develop medical skills and knowledge through human resource development. Therefore, it can be surmised that, especially for the residents and medical students, they were motivated to take advantage of the opportunities provided by the project to obtain more experience in clinical medicine, through an appropriate educational environment and the use of new medical equipment.

<Impact>

It was confirmed that the project had an impact on the improvement in the health status of children in Tamil Nadu and, in a broader sense, in South India, through its contribution to enhancing the diagnostic and therapeutic capacities in the medical service provision of the ICH as a tertiary medical institution.

The ICH was called upon to fulfill its responsibilities as a top referral pediatric hospital in Tamil Nadu and Southern India. The project constructed the outpatient building to renew facilities and procure medical equipment, including clinical testing devices, which then enabled them to perform higher quality diagnoses. In effect, to suggest effective treatment that also includes inpatients, the increasing average cure rate of patients was raised to 97.5% in 2019, along with an inversely decreasing bed occupancy rate, which confirms less crowding compared to the numbers before the project started (Table 3). The improvement in the total quality of the hospital as well as its hygienic environment is illustrated by decreasing numbers of in-hospital mortality, specifically the number of in-hospital deaths within 48 hours and the number of deaths from sepsis at the time of the ex-post evaluation. In 2016, the project completion year, the number of in-hospital deaths within 48 hours was 650 deaths, showed a consistently declining trend to 570 deaths in 2019. By the same token, the number of deaths from sepsis was 315 deaths in 2016, it dropped markedly to 44 deaths in 2019 (Table 4). The ICH thus contributed to the survival and recovery of pediatric patients and it was deemed that with concerted efforts, the medical personnel of the ICH had made it possible to upgrade the quality of the hospital.

From the perspective of the Sustainable Development Goals (SDGs), the health status of children of Tamil Nadu was verified as a target area. According to the Sample Registration System (SRS) Data 2017, there was a significant reduction in infant mortality rate (IMR) from 24 per 1,000 live births in 2010 to 16 in 2017. This number is notably low against the National IMR of 33. Furthermore, the under-five mortality rate in Tamil Nadu was 23 per 1,000 live births in 2015. This number dropped to 19 in 2017 showing improvement during this period, having already achieved the national target of 34. The improvements in child mortality in Tamil Nadu had been a trend even before the implementation of the project, so it was difficult to verify the project's specific contribution with statistically significant data. However, since it contributed to the improvement of the quality of medical services such as the reduction of mortality and the improvement of cure rate, etc., it can be inferred that, to a certain extent, the project contributed to the improvement of the health status of children in Tamil Nadu.

An ambulance transporting a patient to the ER in the outpatient building

Based on the above, it was concluded that the project contributed to the improvement of the health status of children in the region as the ICH was positioned to treat seriously-ill patients not only in Tamil Nadu but also from neighboring states in southern India.

On the other points of concern, there was no resettlement and land acquisition caused by the project, and thus there were no ramifications to do with them. Also, there were no unintended negative impacts observed at the time of the ex-post evaluation.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is high.

<Quantitative Effects>

Table 1: The Annual Number of Examinations (Operation Indicators of the Project)

Indicators	Baseline	Target	Actual			
	The average of 2011 and 2012	2019 3 Years after Completion	2016 Completion Year	2017 1 Year after Completion	2018 2 Years after Completion	2019 3 Years after Completion
Ultrasonographic examinations	18,728	20,600	30,873	30,052	29,303	35,834
X-ray examinations	37,088	40,800	69,000	69,760	79,800	82,292

Source: The ICH

<Qualitative Effects>

Table 2: The Annual Number of Patients of the ICH

Indicator	Actual							
	2012	2013	2014	2015	2016 (Project Completion)	2017	2018	2019
Outpatients	614,361	561,511	534,180	594,760	594,337	609,816	612,025	639,225
Inpatients	35,905	34,389	36,688	39,325	37,582	40,406	42,530	50,609
Critical care patients (emergency case)	-	-	7,232	10,253	12,628	14,688	12,927	17,496

Sources: The ICH

<Impact>

Table 3: Indicators of Inpatients

Indicator	Actual							
	2012	2013	2014	2015	2016	2017	2018	2019
The average cure rate (%)	95.1	95.3	95.6	95.8	96.5	96.6	97.1	97.5
Bed occupancy rate (%)	99	98	100	74	70	69	77	85

Source: The ICH

Note1: the standard definition of hospital discharge in ICH: since the ICH is a top referral hospital, admitted children get discharged when they have sufficiently recovered from the illness.

Note 2: the number of beds: 837

Table 4: In-Hospital Mortality in the ICH

Indicator	Actual							
	2012	2013	2014	2015	2016	2017	2018	2019
In-hospital deaths within 48 hours	822	751	617	859	650	647	490	570
Deaths from sepsis	438	414	559	370	315	380	329	44

Sources: The ICH

3 Efficiency (Rating: ② Fair)

The output of the project was mostly produced as planned (construction of a new outpatient building, procurement of medical equipment (Ultrasound scanner, Endoscopes, Digital X-ray unit, Transport incubator, EMG, etc. for a total of 65 items)). There were changes in the layout of the building, addition of facilities, and changes in procured items based on the actual situation of ICH; however, these changes did not substantially influence the intended project effect.

The planned project cost was a total of 1,528 million yen (Japanese portion: 1,495 million yen, Indian portion: 33 million yen). The actual cost of the Japanese portion was 1,049 million yen, which was within the plan (71% of the plan). In the survey, ICH reported that the Indian portion was disbursed as planned, but it was not possible to collate the details of the planned amount and the expenditure record. Therefore, the cost-efficiency of the project was determined using only the Japanese portion of the project cost.

The actual period for the project was 29 months, which exceeded the planned period (126% of the plan). Project completion was delayed due to the time required for tender preparation that then put on hold the construction work of the water supply and drainage facilities. This was originally borne by the Indian side. This situation made it difficult to start the facility construction, and in response to India's request to reopen the medical practices in the new outpatient building with the least delay, the Japanese side completed the additional work by taking over. This eventually resulted in a delay of 6 months.

Although the project cost was within the plan, the project period exceeded the plan. Therefore, the efficiency of the project is fair.

4 Sustainability (Rating: ③ High)

<Institutional Aspect>

The Policy Note (2019-2020) issued by the Health and Family Welfare Department (HFWD) of the State Government of Tamil Nadu addressed the medical/healthcare field in its main policy, as several renowned medical schools (e.g. MMC) and a large portion of institutions/hospitals have traditionally been located in Chennai. Such accumulated knowledge and resources in the industry are deemed to be essential capital assets that need to be reinforced. Tamil Nadu emerged prominently as a model State in the country in providing quality health care services: it achieved health-related MDGs and also Sustainable Development Goals (SDGs), far ahead of most other Indian States. For this reason, the State Government of Tamil Nadu retained a twin role of ensuring effective and accessible tertiary care for the

treatment of diseases and provision of health services, and of creating adequate human resources for this sector.

In the policy framework indicated above, the administration, regulation, and budgetary control of O&M of medical facilities of all public medical institutes in Tamil Nadu have fallen under the HFWD; whereas, the execution and supervision of maintenance for all the public medical facilities have been under the Public Works Department (PWD). As indicated in Table 5, in terms of the O&M of medical equipment of tertiary medical institutions, the Directorate of Medical Education (DME) has been in charge of standard control and supervision, implementation, and budgetary and disbursement control. Tamil Nadu Medical Services Corporation Ltd. (TNMSC)[3] a specialized public corporation under the supervision of DME in Tamil Nadu has been assigned to execute all the maintenance and procurement of medical materials and equipment of tertiary public institutions. Having deployed approximately 320 members in total, the ICH has been rightly in charge of O&M of medical equipment through proper usage and cleaning on a daily basis. Therefore, the O&M system has remained institutionally unchanged in the foreseeable future.

Furthermore, from the ICH's point of view as an end-user, the O&M has been sufficiently managed and executed from the perspective of deployment of manpower. It was reported by the ICH that DME mechanics were officially dispatched to check on the equipment regularly, but that they had been capable of handling minor malfunctions.

Table 5: Role and Responsibility of the O&M of Tertiary Medical Institutions in Tamil Nadu

Organization	<O&M of medical facilities>				<O&M of medical equipment>			
	Standard control	Regulation	Execution	Budgetary & disbursement control	Standard control	Regulation	Execution	Budgetary & disbursement control
HFWD	✔	✔		✔		✔		
PWD			✔					
DME/TNMSC					✔		✔	✔
ICH (incl. other tertiary medical institutions)							✔	

Source: The ICH

<Technical Aspect>

As described above, there was an institutional mechanism in place for the O&M of the public hospitals in Tamil Nadu and related activities have been systematically carried out as per the established standard of operation even before the project. No major problems were reported regarding technical capabilities for the O&M of precision medical equipment, which required sophisticated maintenance. Regular inspections were performed by medical equipment engineers dispatched by the DME and it was reported that, to date, the medical equipment procured by the project was utilized without any technical problems. It should be noted, however, that this might be because many of the devices were still under warranty at the time of the ex-post evaluation. There was some concern expressed by the ICH regarding the maintenance of some clinical laboratory devices after the expiration of the warranty. Yet, regarding the operation of the newly acquired medical equipment as part of the project there were no major technical issues reported by the ICH. Therefore, it is judged that they have been trained methodically through hands-on experience and have acquired a sufficient skillset for the use and maintenance of the equipment.

<Financial Aspect>

Although there is no data available for the balance of payment including the budget amount allocated for the ICH, the O&M costs have been fully covered by the state budget. At the time of the ex-post evaluation, there had not been any serious issues that occurred in the ICH. According to the available records, all the relevant O&M costs of the ICH have been steadily disbursed; this was approximately 350 million Indian Rupee (Rp.) in 2016, 333 million Rp. in 2017, and 387 million Rp. in 2018 (Table 6). It appears that there have been no problems in securing and maintaining the O&M costs by the State Government. On the other hand, the ICH has faced structural impediments in the prompt procurement of consumables such as reagents utilized in lab tests.

It was confirmed in the field survey that the 3-year warranty period of some of the devices used for the clinical tests would expire soon. Therefore, it was deemed necessary to review and evaluate the operation status and to carry out a re-estimation of costs on a timely manner, which would allow for a proper heads-up for all concerned institutions, particularly the entities of budget control (DME and TNMSC), in order to avoid any interruptions in the use of these devices even after the warranty period expires.

Table 6: Disbursement of O&M for medical equipment and facilities of the ICH

unit: Rp

Item		Actual			
		2016	2017	2018	2019 Up to October
Medical equipment					
Operation cost					
Personal expenses		288,684,000	287,467,000	335,220,000	231,867,000
Medical care activities	Transportation, Library	599,409	700,000	700,000	55,448
	Medicine	6,999,182	6,998,000	8,998,000	4,411,00
	Consumables	1,261,754	4,700,000	4,700,000	4,700,000
	Meals	4,834,511	4,611,000	5,304,000	4,411,000

[3] TNMSC was incorporated under the Companies Act, 1956 on July 1, 1994 and has commenced its function since January 1995. https://tnmsc.tn.gov.in/index.php (accessed June 2020)

Item	Actual			
	2016	2017	2018	2019 Up to October
Maintenance cost				
Maintenance (equipment)	14,000,000	--	--	8,312,534
Equipment purchase	1,515,934	1,950,000	7,397,000	0
Others				
Office supplies	271,203	201,000	202,000	4,035,900
Miscellaneous (including linens)	425,677	129,000	237,000	0
Subtotal	**318,591,670**	**302,056,000**	**358,058,000**	289,415,980
Facilities				
Electricity	17,528,775	18,863,000	21,691,000	12,625,540
Fuel for emergency generator	285,033	253,000	50,000	45,223
Communication	134,485	118,000	101,000	54,161
City water	1,132,236	1,775,000	7,700,000	2,847,355
Medical gas	12,872,071	10,775,000	4,370,375	9,433,284
Subtotal	**31,952,600**	**31,784,000**	**29,542,000**	15,572,279
Total	**350,544,270**	**333,840,000**	**387,600,000**	**304,988,259**

Source: The ICH

<Current Status of Operation and Maintenance>

No major issues were found in the status of medical equipment and facilities, the outpatient building, and facilities were found to be well-maintained and regularly cleaned at the time of the ex-post evaluation. A wide range of procured equipment performed in a generally good condition. As stated in the institutional aspect above, the O&M was carried out by a multilayered mechanism, which covered all public medical institutions. Thus, the management of any public hospitals in Tamil Nadu proceeded through concerted efforts involving multiple organizations. Further, public hospitals funded by the State Government have not been able to charge a medical fee to diagnose patients to cover the real cost of services, however expensive it may be.

As stated above, some delays were reported in the purchase of consumables essential for some clinical laboratory devices procured by the project. For diseases such as metabolic idiosyncrasy and disorders, it is indispensable that the appropriate medical treatment should be administered on time, based on a special and unavoidable set of clinical testing and prescription. To do so, consumables such as specific reagents for clinical testing are quite essential. As a tertiary medical institution, the ICH needed to treat a relatively large number of severely ill patients; however, in some cases, a thorough examination was not always possible because the necessary consumables could not be purchased due to budgetary allowance restrictions within the budgetary framework. It is deemed that there were situations where it was difficult to make a timely diagnosis.

<Evaluation Result>

Therefore, the sustainability of the project effect is high.

III. Recommendations & Lessons Learned

Recommendations to Executing Agency:

To the Ministry of Health and Family Welfare, The State Government of Tamil Nadu

Introduction of a management system for the purchase of consumables and spare parts for medical equipment

As a public hospital, the ICH ensured equal access to medical services by not charging any fees of patients as an ingrained rule and policy. This, arguably, had a downside as the ICH faced the burden of costs embedded in an institutional mechanism that occasionally failed to cover, on time, some of the real cost of services, such as delays in the purchase of necessary consumables for clinical testing. This potentially could become a much bigger issue with an impact on the larger healthcare system, since the project procured several types of precision machinery to upgrade the pediatrics services of the ICH as a tertiary medical institution responsible for treating a larger population of sick children. Also, the actual status of the use of equipment must be thoroughly checked, reviewed, and projected to balance the allocation of costs. Moreover, to strengthen clinical testing in what is considered the top referral medical institution that admits seriously-ill patients, some of whom have rare diseases, it is a prerequisite to have an adequate level of allowance available in the budget to avoid any on-hold situation of medical equipment.

Therefore, in order to optimize the budget, it is highly desirable to construct and introduce an online platform that can facilitate the processing of real-time medical data of individual patients needed for the cost schedule. In addition, the online platform would allow for closer monitoring of the classification of patients in each tertiary medical institution. This could also facilitate balancing public spending more transparently. It would show the status of all medical equipment connected to each hospital, and TNMSC would be able to carry out evidence-based real-time procurement. It would support the decision-making process of the State Government and strengthen the system of using financial resources to further enhance the quality of medical services.

Recommendations to JICA:

Assistance to design/set up the workable management system

As stated above, since there are other tertiary medical institutions under the DME, it may be desirable to construct an overarching cost management mechanism that would cover detailed cost schedules and monitor closely the classification of patients in each hospital (e.g. electronic billing and reporting connected to TNMSC to reduce any human-induced administrative costs and delays). This would enhance the quality of each medical institution. Because the underlying issue of the burden of health care costs and management is deeply

associated with the sustainability of the overall healthcare system in Tamil Nadu, it may be desirable to discuss with the executing agency how best to introduce the system upon request.

Lessons Learned for JICA:

Support to build a mechanism necessary to ensure the timely procurement of medical consumables and spare parts

The ICH was concerned about what would happen to the budget for operation and management costs of medical equipment after the expiration of the warranty period. The particular concerns revolved around issues of how to coordinate the financial gap, as well as how to balance the spending to secure smooth medical operations on demand. Given the multilayered mechanism in place for running the public healthcare system in the state of Tamil Nadu, which included TNMSC, a public hospital such as the ICH did not earn revenue and had no/little financial control over the costs incurred in connection with the delivery of medical services within its facility.

It was thus essential to minimize this uncertainty in a systematic manner. This sort of structural problem could have been foreseen in the planning stage from the perspective of the end-user. Moreover, the fact that necessary consumables were not immediately available to run testing on urgent diagnostic needs of individual patients, meant that diagnosis and treatment could be further delayed. If identified earlier, the ICH and DME/TNMSC could have been notified and made aware of this, and a proposal made in advance for a built-in mechanism on how to cope with the costs and schedule. Although it was agreed with the executing agency on a rough indication of cost by device/equipment according to the estimated frequency of use included in the preparatory survey report, that was hardly reflected and allocated to the budget of the ICH in real terms to secure financial resources in the time after the expiration of the warranty period. Measures related to costs incurred after the warranty period for medical devices/equipment which are not manufactured in the partner country should be deliberately discussed with all stakeholders to secure resources for that matter. This is especially true for a grant aid project involving a public hospital, which is solely run on public funding (free of charge), or with low co-payment rates, which has no authentic and independent financial resources under the given budgetary system.

ER in the outpatient building


Vaulted ceiling and the slope to the top floor of the outpatient building