MONGOLIA
MINISTRY OF EDUCATION AND SCIENCE

PROJECT
FOR
ESTABLISHMENT OF HOSPITAL MANAGEMENT AND MEDICAL SERVICES AT THE MONGOLIA-JAPAN TEACHING HOSPITAL
IN
MONGOLIA

PROJECT COMPLETION REPORT
(SECOND YEAR)

OCTOBER 2022

JAPAN INERNATIOAL COOPERATION AGENCY (JICA)

TOKUSHIMA UNIVERSITY
EHIME UNIVERSITY
KOEI RESEARCH & CONSULTING INC.

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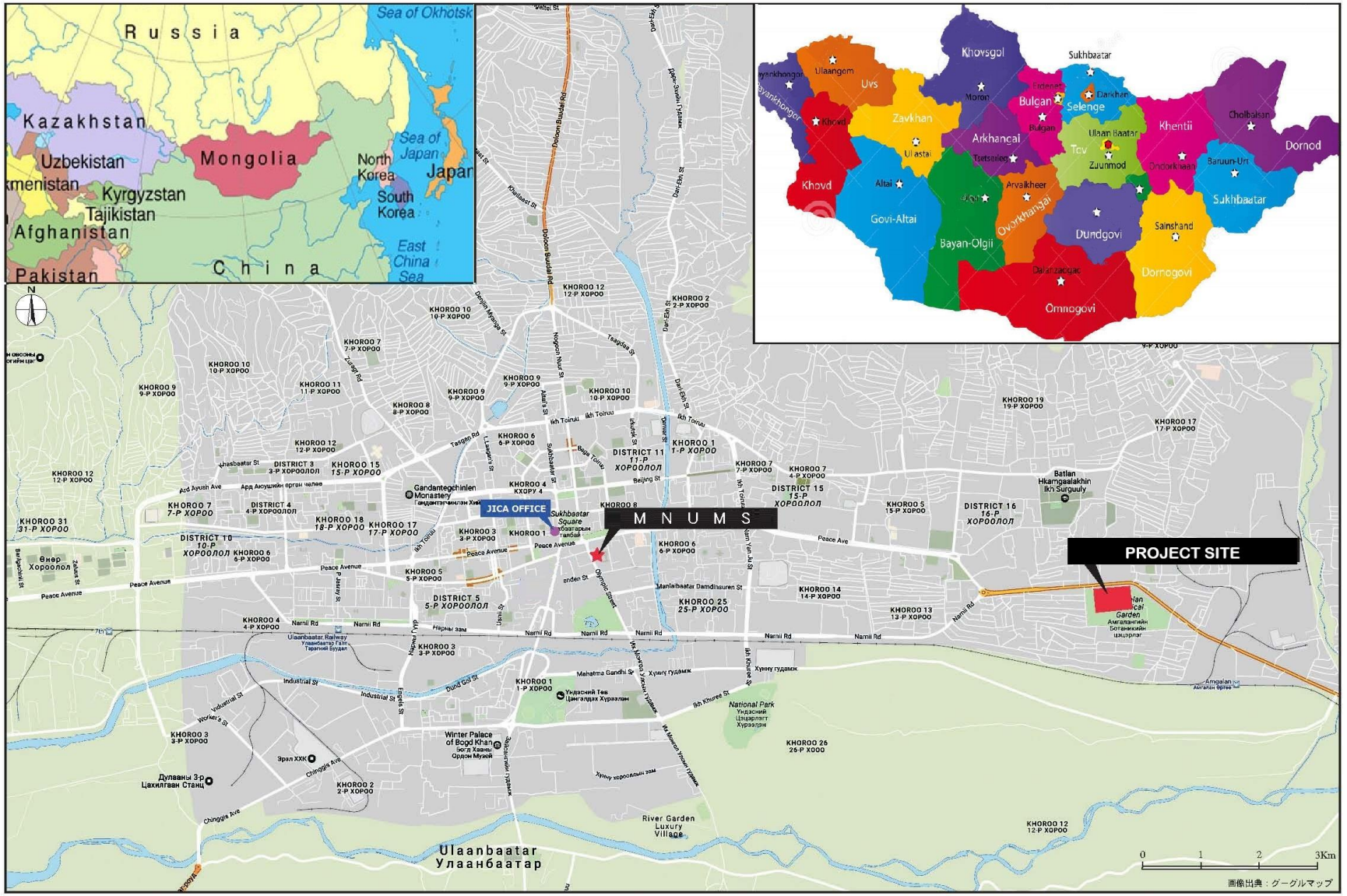

PROJECT SITE

PICTURES

【Field Activities】

On June 16, 2019, the start-up was held for the opening of the MJH in the presence of his excellency Minister of Foreign Affair. Kono from the Government of Japanese and his excellency Prime Minister Khurelsukh from the Government. of Mongolian

MJH has repeatedly conducted simulations in preparation for the start of outpatient services. The photo shows a scene of a Japanese expert teaching at the site in May 2019.

On 1 October 2019, MJH launched outpatient services in all departments. The photo shows the opening ceremony at the start of the service.

The 4th JCC meeting was held on 4 June 2020. The meeting was held online due to the spread of COVID-19. The photo shows attendees from the Mongolian side.

The Project conducted online training for MJH's administrative staffs in July and August 2020 to strengthen the hospital's operational structure.

On 7 September 2020, MJH opened the Internal Medicine Ward and ICU Unit and began accepting inpatients. The picture shows the online tour during the readiness check.

The 5th JCC meeting was held on 1 October 2021. Due to the spread of COVID-19, it was held in a hybrid method with online and face-to-face. The picture shows attendees from the Japanese side.

On 26 April 2022, a joint meeting with the Patient Support Center, the Nursing Department, and the ward chief to provide patient-centered medical care.

In-hospital ICT rounds conducted by the Infection Control and Management Department on a regular weekly basis. The picture shows a Japanese expert teaching in June 2022.

A medical information systems (IT) specialist working in the radiology department of MJH in June 2022.

Application training for angiography apparatus in June 2022. In addition to MJH, physicians from National Hospital No.3 participated in the inter-hospital collaboration.

The Infection Control and Management Workshop was held on 28 June 2022. A total of more than 150 participants attended from various institutes in Mongolia. The picture shows a presentation from the director of MJH.

Wrap-up meeting in July 2022 when clinical laboratory, clinical engineering and radiology specialists visited on-site.

In September 2022, seminar on emergency medicine given by lecturers from various departments at the Tokushima University. Various seminars were held in a hybrid method with online and at a local venue.

The 6th JCC meeting was held on 14 September 2022. The picture shows the presentation from the President of MNUMS.

At the 6th JCC, both the Mongolian and Japanese sides reported the results and achievements of the Project activities and confirmed the completion of the Project. The picture shows a group photo of the participants.

【Training in Japan】

The 10th training in Japan (18 – 22 November 2019) was attended by 8 trainees from various departments involved in Operation Theater management. The picture shows the exchange of opinions with experts from the Tokushima University Hospital regarding surgical simulation videos.

During the training in Operation Theater of Tokushima University Hospital, the participants observed the advance preparation and day-to-day operation of Operation Theater, and developed a preparation plan for the start of the operating room at MJH. (The 10th Training in Japan: 18 – 22 November 2019)

On-site training was conducted at Tokushima University Hospital on cleaning, disinfection, and sterilization processes and waste classification and disposal, and a plan was developed to examine the state of business operations at MJH. The 10th training in Japan: 18 – 22 November 2019)

During the 11th training in Japan (25 – 29 November 2019), three participants from the Patient Support Center and two from the ICU department participated in the training, which included a site visit and discussions at Tokushima University Hospital. The picture shows the site visit of the multidisciplinary team conference.

During the training at the Patient Support Center, through lectures and exchanges of opinions on the significance and role of the center, the participants reviewed the role of this center at MJH and formulated a business operation plan. (The 11th training in Japan: 25 – 29 November 2019)

During the training in the ICU, the participants learned about the preparation and environment prior to receiving patients, nursing care tasks, and necessary related documents and manuals, and developed a preparation plan for the start of the ICU at MJH.
(The 11th training in Japan: 25 – 29 November 2019)

The 12th training in Japan was held on 17-24 August 2022. Nine trainees participated. The photo shows the tour and hands-on learning at the Tokushima University of Skills Lab.

A field trip to the Nutrition Department of Ehime University Hospital. Participants learned about infection control management and operational management in each department and actively exchanged opinions.
(The 12th training in Japan: 17 – 24 August 2022)

ABBREVIATIONS

ADB	Asian Development Bank
AP	Access Point
BME	Bio-medical Engineer
CHD	Center for Health Development
COVID-19	Coronavirus Disease 2019
C/P	Counter Part
CT	Computerized Tomography
DAC	Development Assistance Committee
DHCP	Dynamic Host Configuration Protocol
EMS	Emergency Medical Services
ERP	Enterprise Resource Planning
FY	Fiscal Year
HCU	High Care Unit
HIS	Hospital Information System
ICT	Infection Control Team
ICU	Intensive Care Unit
IMR	Infant Mortality Rate
IT	Information Technology
ISO	International Organization for Standardization
JCC	Joint Coordination Committee
JICA	Japan International Cooperation Agency
KRC	Koei Research and Consulting Ltd.
LIS	Laboratory Information System
ME	Medical Engineering
MECSS	Ministry of Education, Culture, Science and Sport
MEDS	Ministry of Education and Science
MJH	Mongolia-Japan Hospital of the Mongolian National University of Medical Sciences
MMR	Maternal Mortality Rate
MNT	Mongolian Tugrik
MNUMS	Mongolian National University of Medical Sciences
MOH	Ministry of Health
MRI	Magnetic Resonance Imaging System
NCDs	Non-Communicable Diseases
ODA	Official Development Assistance
OECD	Organisation for Economic Cooperation and Development

OGSM	Objective, Goals, Strategies, and Measures
OJT	On the Job Training
PACS	Picture Archiving and Communication System
PC	Personnel Computer
PDM	Project Design Matrix
PDMS	Physical Distribution Management System
PO	Plan of Operation
R/D	Record of Discussions
RIS	Radiology Information System
SPD	Supply Processing and Distribution
TOT	Training of Trainers
WDI	World Development Indicators
WG	Working Group

PROJECT FOR ESTABLISHMENT OF HOSPITAL MANAGEMENT AND MEDICAL SERVICES AT THE MONGOLIA-JAPAN TEACHING HOSPITAL IN MONGOLIA (SECOND YEAR)

PROJECT COMPLETION REPORT

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1. Basic Information of the Project

1.1 Country

Mongolia

1.2 Title of the Project

Project for Establishment of Hospital Management and Medical Services at Mongolia-Japan Teaching Hospital in Mongolia

1.3 Duration of the Project (Planned and Actual)

- Planned: February 2017 - January 2022 (60 months)
- Actual: February 2017 - October 2022 (69 months)）
  - First Year: February 2017 - April 2019
  - Second Year: May 2019 - October 2022

Duration was extended due to travel restrictions from March 2020 to February 2021 caused by COVID-19. It was agreed at the 5th Joint Coordination Committee (JCC) meeting on 1 October 2021).

1.4 Background of the Project (from Record of Discussions (R/D))

The health situation in Mongolia shows steady improvement; infant mortality rate (IMR) per 1,000 births and maternal mortality rate (MMR) per 100,000 live births decreased from 34.9 (2005) to 19.0 (2015) and from 95 (2005) to 44 (2015)[1], respectively. In remote areas, however, quality of health services at primary and secondary level is still low due to low quality of health service providers and lack of medical equipment. In order to solve the situation, the Government of Mongolia made policy efforts for developing the capacities of medical health workers. But training scheme, such as pre- and post-graduate training program for medical personnel requires further improvement.

To deal with such a challenge, the Mongolia-Japan Teaching Hospital (MJH)[2] with 104 beds and 7 departments will be established through the scheme of Grant Aid. MJH is supposed to be under Mongolia National University of Medical Sciences (MNUMS), from which over 90% of medical professionals in Mongolia graduate. MJH is expected to contribute to the improvement of medical services in Mongolia as a leading institution of training for human resource for health as well as of providing advanced medical services for Non-Communicable Diseases (NCDs) such as cerebrovascular disease and malignant tumor.

However, as MNUMS has never run a teaching hospital like MJH, MJH needs to be a general hospital which has a high-level system for hospital management and delivery of quality medical services. Hence, the Mongolia Government requested Japan to assist for establishment of Japanese-style hospital management and quality medical services.

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[1] All of the aforementioned data are from World Bank, World Development Indicators (WDI), June 2016

[2] In the Record of Discussion (R/D) signed on 23rd September 2016, the Mongolian-Japan Teaching Hospital (MJH), then by Decree of the Minister of Education, Culture, Science and Sports (No. A/307, 1st July 2020), the name was changed to "Mongolia-Japan Hospital of the Mongolia National University of Medical Sciences (MJH)".

1.5 Overall Goal and Project Purpose (from Record of Discussions (R/D))

The overall goal, project purpose, outputs and indicators for the Project are listed below.

Table 1 Overall Goal, Project Purpose, Outputs, etc. (Revised Version)

Overall Goal, Objective and Outputs	Verification Indicators	Means of Verification
【Overall Goal】 MJTH is functioned as a general/teaching hospital at a high level.	1. MJH is certified as the ISO 9001 (Quality Management System). 2. Pre-service and post-graduate trainings are conducted in MJH.	1. Hospital reports
【Project Purpose】 A comprehensive system is established in MJTH for the provision of advanced and quality medical services.	1. The bed occupancy rate is kept more than 80% during the final year of the Project.	1. Project Completion Reports 2. Monitoring Sheet 3. Hospital Reports
	2. Patient satisfaction for medical services is over 80% at the time of the termination of the Project.	1. Project Completion Report 2. Monitoring Sheet 3. Hospital Reports 4. Patient satisfaction survey
【Outputs】 Output 1: Appropriate management is implemented in MJH.	1. An executive committee is formed at MJH, and the committee activities are conducted in accordance with the committee regulations at the time of the termination of the Project.	1. Hospital Reports 2. Bylaws and regulations on an executive committee, Minutes of the meetings of the executive committee
	2. MJH is able to proceed hospital management (financial management, physical distribution management, and information management) based on its management policy at the time of the termination of the Project.	1. Management policy and plan of MJH 2. Budget document with monthly schedule and performance/financial analytical report 3. SPD reports 4. Action Plans to respond to Audit reports' recommendations
Output 2: Patients-centered medical services are provided in MJH.	1. Model clinical pathways are developed based on the actual medical performance of prioritized departments and are implemented by multi-professional team at the time of the termination of the Project.	1. Project Completion Report 2. Monitoring Sheet 3. Hospital Reports 4. Regulations and Guidelines 5. Conference records
	2. Regulations and guidelines for the prevention of medical accidents and for the prevention and control of nosocomial infections are followed in all departments in MJH at the time of the termination of the Project.	1. Project Completion Report 2. Monitoring Sheet 3. Incident reports, Hiyari-Hatto reports 4. ICT (Infection Control Team) round reports
Output 3: Advanced medical services are provided in MJH.	1. At least in 3 areas (CT, MRI, endoscopy, etc.), new diagnostics and treatment techniques which are acquired through training	1. Project Completion Report 2. Monitoring Sheet 3. Hospital Reports

Overall Goal, Objective and Outputs	Verification Indicators	Means of Verification
	courses in Japan and Mongolia are introduced at the time of the termination of the Project.	
	2. At least three in-hospital workshops are held in MJH during the final year of the Project.	1. Project Completion Report 2. Monitoring Sheet 3. Hospital Reports
Output 4: Advanced emergency medical services (EMS) are provided in MJH.	1. The system to provide major medical services for 24 hours is established at the time of the termination of the Project.。	1. Project Completion Report 2. Monitoring Sheet 3. Hospital Reports
	2. Findings and experiences of the EMS in MJH are incorporated into the curriculum in MNUMS at the time of the termination of the Project.	1. Road map for developing the curriculum 2. Minutes of meetings

Source: PDM Version 2 (Project Design Matrix, 1st October 2022 Version)

Table 2 Activities of the Project

Output 1: Appropriate management is implemented in MJH

【1-1: Construction of functional organization of MJH】

1-1-1: To develop bylaws at each clinical department, nursing department, medical service support division, medical affairs and service division, medical engineering (ME) division, health support division and committees.

1-1-2: To establish a medical informatics division followed by the development of a strategic plan for IT-driven hospital management.

1-1-3: To develop a detailed recruitment plan for medical professionals (medical doctors, nursing staff and other co-medical staff), administration staff and other support staff.

1-1-4: To develop pre-service and post-graduate training systems for medical professionals.

【1-2: Sound management of MJH】

1-2-1 To develop a comprehensive preparation plan for the opening of MJH, including detailed plans for medical services, bed management and procurement.

1-2-2 To provide medical professionals, administration and other support staff with Training in Japan for administrative management.

1-2-3 To develop a hospital management plan (budget/revenue and expenditure management, personnel management, etc.) on the basis of the knowledge and experiences acquired through the Training in Japan.

1-2-4 To provide technical support in bylaws-based practical operation newly established divisions such as the health support division and the ME division.

1-2-5 To support the medical informatics division to promote practical introduction of IT system(s) in accordance with the strategic plan.

1-2-6 To develop a physical distribution management system (PDMS) for medicines, medical materials, consumables and office supplies.

Output 2: Patients-centered medical services are provided in MJH

【2-1: Introduction of team-approached patient management system】

2-1-1 To conduct Trainings in Japan for patient management (team-approach, standardization of medical services, risk management, etc.) geared to eligible medical professionals.

2-1-2 To develop operational guidelines and introduction plan for team-approached patient management as well as capacity development plans geared to co-medical staff, on the basis of the knowledge and experiences acquired through the Training in Japan. (Version 1)

To develop practical tools and communication system for team-approached patient management as well as capacity development plans geared to co-medical staff, on the basis of the knowledge and experiences acquired through the Training in Japan. (Version 2)

2-1-3 To conduct in-hospital trainings for MJH staff on the team-approached patient management.

2-1-4 To introduce the team-approached patient management to several pilot departments in accordance with the guidelines on a trial basis at the MNUMS General Hospital. (Version 1)

To introduce team-approached patient management to several pilot departments by utilizing the practical tools and the communication system on a trial basis at the MNUMS General Hospital. (Version 2)

2-1-5 To phase the team-approached patient management to all clinical departments after the opening of MJH on the basis of the results of the trial introduction.

【2-2: Standardization of medical services】

2-2-1 To develop a plan for the introduction of clinical pathways and staff capacity development, on the basis of the Training in Japan (Activity 2-1-1).

2-2-2 To introduce clinical pathways for both patients and medical professionals to several pilot departments in accordance with the guidelines on a trial basis at the MNUMS General Hospital.

2-2-3 To phase the standardization of medical services using clinical pathways to all medical departments after the opening of MJH, on the basis of the results of the trial introduction. (Version 1)

To develop model clinical pathways appropriate for MJH on the basis of the results of the trial introduction and to apply them to prioritized departments. (Version 2)

【2-3: Risk management of medical care】

2-3-1 To develop regulations for the prevention of medical accidents on the basis of analyses of the incidents and its prevention activities in the MNUMS General Hospital.

2-3-2 To conduct a risk management workshop on the basis of the regulations geared to all MTH staff before the opening of MTH.

2-3-3 To perform regular monitoring activities at the initiative of the risk management committee after the opening of MTH.

【2-4: Prevention and control of nosocomial infections】

2-4-1 To establish a committee for the prevention and control of nosocomial infections followed by the development of guidelines and/or regulations for it.

2-4-2 To establish a surveillance system for nosocomial infections such as the identification of causative

microorganisms and statistical analyses. 2-4-3 To conduct a workshop for the prevention and control of nosocomial infections on the basis of the regulations geared to all MTH staff before the opening of MTH. 2-4-4 To perform regular monitoring on the compliance with the guidelines and/or regulations at the initiative of the committee.
Output 3: Advanced medical services are provided in MJH. 3.1: To develop a plan of the Training in Japan for other medical technologies than those related to medical practices 5 regarding diagnoses and treatments of diseases. 3.2: To conduct Training in Japan for eligible medical staff in accordance with the plan. 3.3: To conduct training debriefings, intra-/inter-department study meetings, etc. for promoting technology sharing.
Output 4: Advanced emergency medical services (EMS) are provided in MJH. 4-1: To conduct trainings of operational management, which include staffing and financial management geared to staff members engaged in EMS. 4-2: To develop bylaws, which include staffing for the EMS center for providing prompt testing, diagnosis and treatment, on the basis of the knowledge and experiences acquired through the Training in Japan. 4-3: To incorporate findings and experiences of the EMS in MJH on the lectures in MNUMS. 4-4: To widely share the findings and experiences of EMS in MJH with medical professionals in Mongolia through the implementation of conferences, etc.

Source: PDM (Version 1 and Version 2)

1.5 Target Area

Ulaanbaatar City (Capital)

1.6 Implementing Agency

- Supervisory authority: Ministry of Education and Science (MEDS)[3]
- Implementation agency: MNUMS

[3] Formerly known as the Ministry of Education, Culture, Science and Sport (MECSS).

2. Result of the Project

2.1 Result of the Project

2.1.1 Input by the Japanese Side (Planned and Actual)

(1) Amount input by the Japanese side

- First year: 268.8 million Japanese Yen (Actual)
- Second year: 489.1 million Japanese Yen (Forecast)
- Total: 757.9 million Japanese Yen (Forecast)
  757.9 million Japanese Yen (Planned)

(2) Assignments of the Japanese experts

The Project was conducted as a joint venture by Tokushima University, Ehime University, and Koei Research & Consulting Inc. The members and assignments of Japanese experts as of the end of July 2022 is as follows. The details are shown in Annex 1-1.

- 1st year: 29.55 person-months of works in Mongolia 27.65 person-months of works in Japan
  Sub-total 57.20 person-months
- 2nd year: 54.94 person-months of works in Mongolia 73.91 person-months of works in Japan
  Sub-total 128.85 person-months
- Total: 84.49 person-months of works in Mongolia 101.56 person-months of works in Japan
  Grand-total 186.05 person-months

Table 3 Members of the Japanese Experts (1st Year: February 2017 – April 2019)

Name	Title	Affiliation	Grade
Minoru Irahara	Chief Advisor/Hospital Management (1)	Tokushima University	2
Hiroshi Abo	Deputy Chief Advisor/ Hospital Management (2)/ Training management (1)	Koei Research & Consulting Inc.	3
Yasuhiko Nishioka	Hospital Management (Nursing /Patient Management, Emergency Medicine, Supply Processing & Distribution (SPD)) (1)	Tokushima University	3
Toshiya Matsuzaki	Hospital Management (Nursing /Patient Management, Emergency Medicine, Supply Processing & Distribution (SPD)) (2)	Tokushima University	4
Shinsuke Kato	Hospital Management (Nursing /Patient Management, Emergency Medicine, Supply Processing & Distribution (SPD)) (3)	Tokushima University	4
Takashi Higaki	Hospital Management (Hospital Infection Control, Medical Information system (IT)) (1)	Ehime University	3
Hidemi Takata	Hospital Management (Hospital Infection Control, Medical Information system (IT)) (2)	Ehime University	4
Yasunori Oka	Hospital Management (Hospital Infection Control, Medical Information system (IT)) (3)	Ehime University	4
Tomoko Takagai	Nursing/Patient Management (1)	Tokushima University	3
Hiroko Kume	Nursing/Patient Management (2)	Tokushima University	4
Sachiko Kondo	Nursing/Patient Management (3)	Tokushima University	4

Name	Title	Affiliation	Grade
Akemi Nakano	Nursing/Patient Management (4)	Tokushima University	4
Satsuko Suzuki	Nursing/Patient Management (5)	Tokushima University	4
Akiyo Kanazawa	Nursing/Patient Management (6)	Tokushima University	4
Rie Fujikawa	Nursing/Patient Management (7)	Tokushima University	4
Shino Nishimagi	Project Coordinator (2)/ Training Management (3)	Koei Research & Consulting Inc.	4
Yoshiharu Sugino	Project Coordinator (3)/ Training Management (4)	Koei Research & Consulting Inc.	5
Asako Hayashi	Project Coordinator (4)/ Training Management (5)	Koei Research & Consulting Inc.	4
Masaji Nishimura	Emergency Medicine (1) (~December 2018)	Tokushima University	3
Jun Oto	Emergency Medicine (1) (January 2019~)	Tokushima University	4
Taiga Itagaki	Emergency Medicine (2)	Tokushima University	4
Hisamichi Tauchi	Hospital Infection Control (1)	Ehime University	3
Harutaka Aono	Hospital Infection Control (2)	Ehime University	4
Satomi Sakita	Hospital Infection Control (3)	Ehime University	4
Hiroshi Kimura	Hospital Infection Control (4)	Ehime University	4
Eizen Kimura	Medical Information system (IT) (1)	Ehime University (National Institute for Public Health)	3
Makoto Morita	Medical Information system (IT) (2)	Ehime University	4
Daigo Sano	Medical Information system (IT) (3)	Koei Research & Consulting Inc.	5
Teruhito Kido	Medical Information system (IT) (4)	Ehime University	4
Yasuo Akiyama	Supply Processing & Distribution (SPD) (1)	Tokushima University (Kojinkai Foundation)	3
Shigeru Kawano	Supply Processing & Distribution (SPD) (2)	Tokushima University	4
Fumie Murasawa	Training Management (6) / Communication Skills	Tokushima University	4
Akira Kitora	Hospital Finance (1)	Tokushima University	4
Suguru Okada	Hospital Finance (2)	Tokushima University	4
Hiroyuki Kakizoe	Hospital Finance (3)	Tokushima University	4
Miwa Kodama	Hospital Administration (1)	Tokushima University	4
Akane Suzuki	Hospital Administration (2)	Tokushima University	4
Shinichi Kawano	Hospital Administration (3)	Tokushima University	4
Masafumi Harada	Medical dept (Radiology) (1)	Tokushima University	4
Seiji Iwamoto	Medical dept (Radiology) (2)	Tokushima University	4
Youichi Otomi	Medical dept (Radiology) (3)	Tokushima University	4
Yasushi Takagi	Medical dept (Neurosurgery) (1)	Tokushima University	4
Yoshifumi Mizobuchi	Medical dept (Neurosurgery) (2)	Tokushima University	4
Hiroomi Kanayama	Medical dept (Internal Medicine) (1)	Tokushima University	4
Nobuaki Yamamoto	Medical dept (Internal Medicine) (2)	Tokushima University	4
Takeshi Naito	Medical dept (Ophthalmology)	Tokushima University	4
Daisuke Hamada	Medical dept (Rehabilitation) (1)	Tokushima University	4
Toshihiko Nishisho	Medical dept (Rehabilitation) (2)	Tokushima University	4
Takayuki Nakao	Clinical Examination	Tokushima University	4
Yoshiaki Onishi	Clinical Engineering	Tokushima University	4

Source: Project Team

Table 4 Members of the Japanese Experts (2nd Year: May 2019 – October 2022)

Name	Title	Affiliation	Grade
Minoru Irahara	Chief Advisor/Hospital Management (1) (~March 2022)	Tokushima University	2
	Hospital Management (Nursing /Patient Management, Emergency Medicine, Supply Processing & Distribution (SPD)) (1) (April 2022~)		3
Masashi Akaike	Chief Advisor/Hospital Management (1) (April 2022~)	Tokushima University	2
Hiroshi Abo	Deputy Chief Advisor/ Hospital Management (2)/ Training management (1)	Koei Research & Consulting Inc.	3
Takeshi Naito	Hospital Management (Nursing /Patient Management, Emergency Medicine, Supply Processing & Distribution (SPD)) (2)	Tokushima University	3
Takashi Higaki	Hospital Management (Hospital Infection Control, Medical Information system (IT)) (1)	Ehime University	3
Hidemi Takata	Hospital Management (Hospital Infection Control, Medical Information system (IT)) (2)	Ehime University	4
Yasunori Oka	Hospital Management (Hospital Infection Control, Medical Information system (IT)) (3)	Ehime University	4
Tomoko Takagai	Nursing/Patient Management (1)	Tokushima University (April 2022~Tokushima Bunri University)	3
Hiroko Kume	Nursing/Patient Management (2)	Tokushima University	4
Rie Fujikawa	Nursing/Patient Management (3)	Tokushima University	4
Jun Oto	Emergency Medicine	Tokushima University	4
Hisamichi Tauchi	Hospital Infection Control (1)	Ehime University	3
Harutaka Aono	Hospital Infection Control (2)	Ehime University	4
Hiroshi Kimura	Hospital Infection Control (3)	Ehime University	4
Hitoshi Miyamoto	Hospital Infection Control (4)	Ehime University	4
Eizen Kimura	Medical Information system (IT) (1)	Ehime University	3
Teruhito Kido	Medical Information system (IT) (2)	Ehime University	4
Satomi Sakita	Medical Information system (IT) (3)	Ehime University	4
Masato Tagi	Medical Information system (IT) (4)	Tokushima University	4
Daigo Sano	Medical Information system (IT) (5) (~August 2020)	Koei Research & Consulting Inc.	4
Hideaki Kaise	Medical Information system (IT) (5) (September 2020~)	Koei Research & Consulting Inc.	5
Yasuo Akiyama	Supply Processing & Distribution (SPD)	Tokushima University (Kojinkai Foundation)	3
Akira Tangoku	Medical dept (Surgery)	Tokushima University	3
Hiroomi Kanayama	Medical dept (Urology)	Tokushima University	4
Yasushi Takagi	Medical dept (Neurosurgery)	Tokushima University	4
Tatsuji Inoue	Medical dept (Cardiovascular Internal Medicine)	Ehime University	4
Masafumi Harada	Medical dept (Radiology)	Tokushima University	4
Tomoyuki Kido	Medical dept (Radiology) (2)	Ehime University	4
Yoshiaki Kamei	Medical dept (Hepatobiliary and pancreatic Surgery)	Ehime University	4
Tatsuhiko Kutsuna	Medical dept (Orthopedic Surgery)	Ehime University	4
Tasuku Nishihara	Medical dept (Anesthesiology)	Ehime University	4

Name	Title	Affiliation	Grade
Takayuki Nakao	Clinical Examination	Tokushima University	4
Yoshiaki Onishi	Clinical Engineering	Tokushima University	4
Naobobu Kawata	Radiological examination	Tokushima University	4
Akira Kitora	Hospital Finance	Tokushima University	4
Nobuyuki Hashimoto	Hospital Finance	Koei Research & Consulting Inc.	4
Akane Suzuki	Hospital Administration	Tokushima University	4
Fumie Murasawa	Training Management (4)/ Communication Skills	Tokushima University	4
Shino Nishimagi	Project Coordinator (1)/ Training Management (2)	Koei Research & Consulting Inc.	4
Ryouhei Sakurai	Project Coordinator (2)/ Training Management (3) (~July 2021)	Koei Research & Consulting Inc.	4
Kaito Onishi	Project Coordinator (2)/ Training Management (3) (August 2021~)	Koei Research & Consulting Inc.	4

Source: Project Team

(3) Training in Japan

As shown below, training in Japan was conducted nine times in the first year and three times in the second year due to travel restrictions caused by COVID-19, which made a total of 12 training sessions in Japan. The number of trainees received was 66 in the first year and 22 in the second year, for a total of 88 trainees.

【First year (February 2017 - April 2019】

① 1st training in Japan (Overview of the Japanese Hospital System) was held at Tokushima University and Ehime University for 14 days from 25 June (Sun) to 8 July (Sat), 2017. 16 members from MNUMS participated in the training.

② 2nd training in Japan (Hospital Management) was held at Tokushima University for 12 days from 22 October (Sun) to 2 November (Thu), 2017. 9 members from MNUMS participated in the training.

③ 3rd training in Japan (Nursing Management) was held at Tokushima University for 14 days from 12 November (Sun) to 25 November (Sat), 2017. 6 members from MNUMS participated in the training.

④ 4th training in Japan (Nosocomial Infection Control) was held for 10 days from 21 February (Wed) to 2 March (Fri), 2018, at the Annual Meeting of the Japanese Society of Environmental Infection Control (held at Takanawa Prince Hotel) and Ehime University. 4 members from MNUMS participated in this training.

⑤ 5th training in Japan (Hospital Information System) was consisted of an "IT Team" and a "Physician Team." The former was conducted for 17 days from 21 February (Wed) to 9 March (Fri), 2018, at PSP Corporation in Tokyo which provided PACS as a grant aid project, Ehime University and Shimadzu Corporation which provided radiological equipment as a grant aid project. 4 members from MNUMS participated. The latter was conducted at PSP Corporation

and Ehime University for 10 days from 21 February (Wed) to 2 March (Fri), 2018, with 3 MNUMS members participating.

⑥ 6th training in Japan (Hospital Management (Clinical Laboratory Technology and Clinical Engineering Technology)) was held at Tokushima University for 7 days from 25 February (Sun) to 3 March (Sat), 2018. 6 members from MNUMS participated in the training.

⑦ 7th Training in Japan (Hospital Management (Simulation Planning)) was held at Tokushima University for 8 days from 22 July (Sun) to 29 July (Sun), 2018. 9 members from MNUMS participated in the training.

⑧ 8th Training in Japan (Nosocomial Infection Control) was held at Ehime University for 7 days from 2 September (Sun) to 8 September (Sat), 2018. 6 members from MNUMS participated in this training course.

⑨ Observation training for 3 MNUMS officials was conducted at Japan International Cooperation Agency (JICA) Headquarters and Tokushima University for 4 days from 26 September (Wed) to 29 September (Sat), 2018.

【Second year (May 2019 - October 2022)】

⑩ 10th Training in Japan (Team Approach (Surgical Section)) was held at Tokushima University for 5 days from 18 November (Mon) to 22 November (Fri), 2019. 8 members from MJH participated.

⑪ 11th Training in Japan (Team Approach (Patient Support Center/Intensive Care Unit (ICU)) was held at Tokushima University for 5 days from25 November (Mon) to 29 November (Fri), 2019. 5 members from MJH participated.

⑫ 12th training in Japan (Hospital Management (financial management, logistics management, nursing/patient management, and risk management) and team-approached patient management was held at Tokushima University, and hospital information system and nosocomial infection control at Ehime University for 7 days from 17 August (Wed) to 24 August (Wed), 2022. 9 members from MJH participated.

(4) Equipment provided

The following is a list of equipment provided.

Table 5 List of Equipment Provided

Item	Specification	Q'ty	Recipient
Desktop computer	Fujitsu Esprimo P556/E85+MI4W	2	MJH
Laptop computer	Fujitsu Lifebook A557	2	MJH
Laptop computer	DELL Inspiron 15 3593-103MX-S	3	MJH
Laptop computer	Acer Aspire-3 model no. N19C1	2	MJH
Projector	13500014355/ Projector BenQ MS527 (130001, 3300AL, SVGA (800 x 600))	1	MJH
Copy machine	Xerox Workcenter 7220i	1	MJH
UPS-2000VA	811-134-015 APC SRV2KI, Smart-UPS SRV 2000VA 230V	1	MJH

Item	Specification	Q'ty	Recipient
Teleconferencing system	- Monitor stand: (1) (BRNBFS01G) - Laptop computer: (1) (DELL Inspiron 15 3593-103MX-S) - TV monitor: (1) (Sony KDL-50W660G Full HD HDR LED Smart TV)	1	MJH
Radiation Management System	PSP ARIStation LIMITED	1	MJH
PACS system	DICOM viewer "EV Insite" License	7	MJH
RIS Server	Fujitsu RX1330M4	1	MJH
RIS terminal	EPSON NJ4100E	7	MJH
Patient Monitor for HCU	PVM-2703 (Nihon Kohden Corporation)	4	MJH
Air cleaner	Sharp KS-F30E-W 00717, 00883	2	MJH

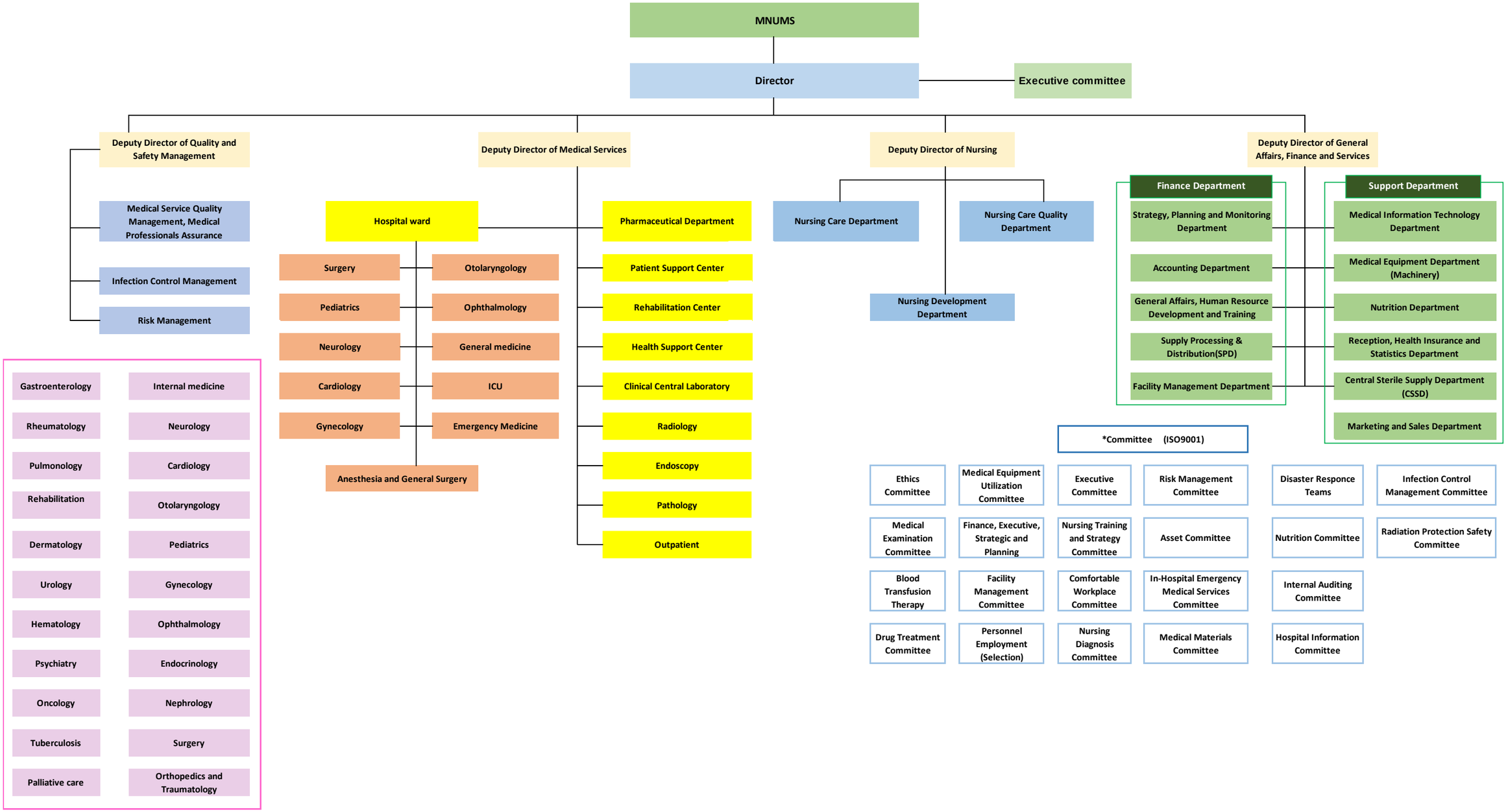
Note: PACS (Picture Archiving and Communication System for Medical Services), DICOM (DICOM: International Standard for Medical Data Communication), RIS (Radiology Information System, HCU (High-Care Unit))

Source: Project Team

2.1.2 Input by the Mongolian Side (Planned and Actual)

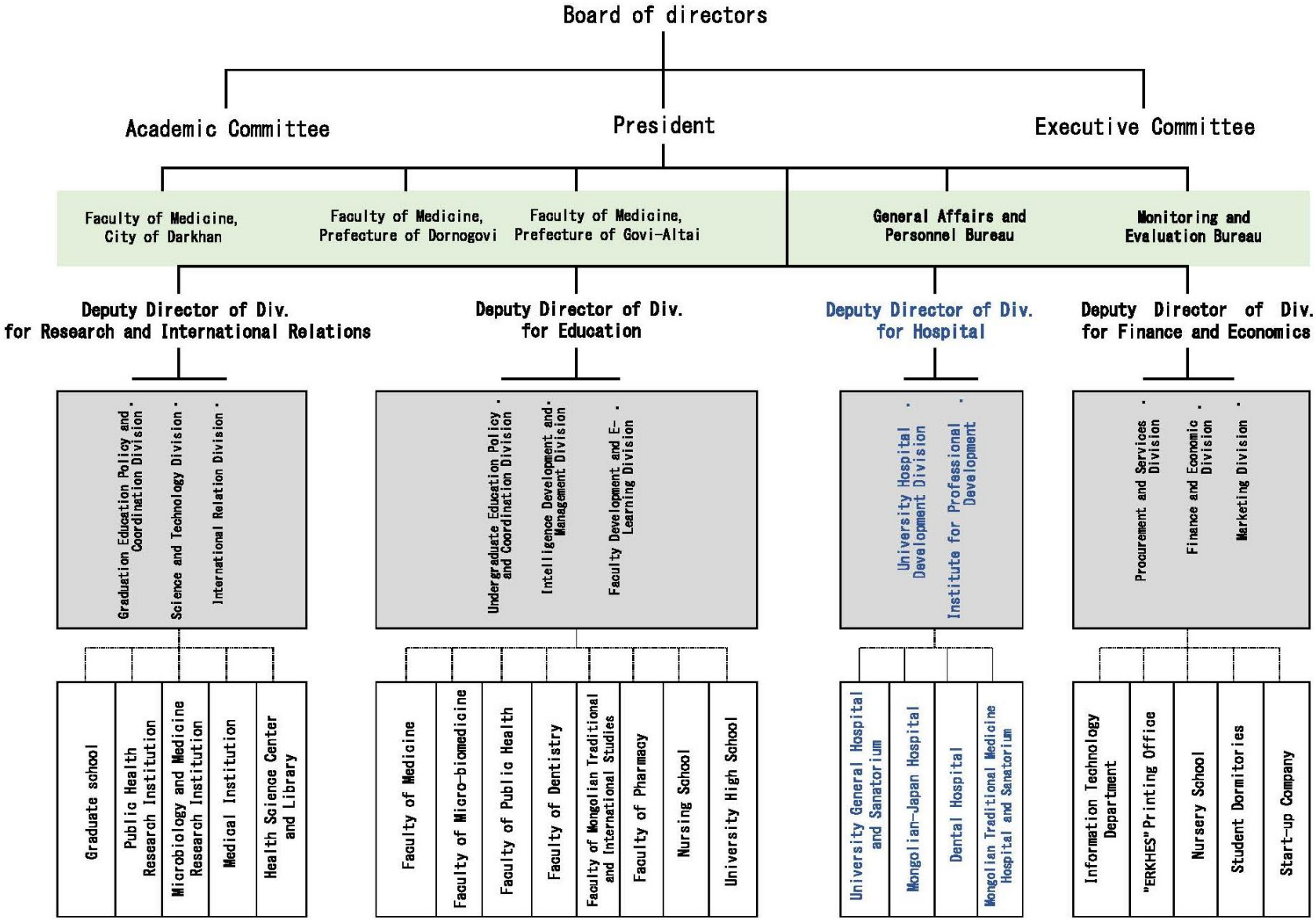
(1) Implementation structure by the Mongolian side

For the implementation of the Project, a system was established in which the heads of each department of MJH under the jurisdiction of MNUMS served as principal counterparts (C/P) to discuss with Japanese experts and receive technical transfers. Figure 1 shows the organizational chart of MNUMS as C/P. The jurisdiction of MJH was transferred from the Ministry of Health (MOH) to MEDS in February 2021. Since the External Cooperation Division was discontinued as a result of the reorganization from the Ministry of Education, Culture, Science and Sport (MECSS) to MEDS, the Project Director has become the state secretary of MEDS as of August 2022 (Ms. L. Tsedevsuren). On the MNUMS side, Dr. N. Khurelbaatar is currently the President (Project Manager). The following diagrams show the organizational chart of MJH and MNUMS as of September 2022.



Source: MNUMS

Figure 1 Organization Chart of MJH



Source: MJH

Figure 2 Organization Chart of MNUMS

(2) Input by the Mongolian side

The Mongolian side provided the following inputs for the implementation of the Project.

- Provision of the project office space (in the MNUMS building until September 2019, currently in MJH) and furniture for the office of the Project.
- Utilities for the project office.
- Provision of venues and places for holding Joint Coordinating Committee (JCC) meetings, various workshops, and simulations, as well as covering the various costs.
- Permission to enter the security area.
- Provision of necessary materials.
- Procurement of materials, equipment, and supplies necessary for the operation of the MJH, Budget allocations, including personnel expenses

2.1.3 Activities (Planned and Actual)

With regard to the plan and actual performance of the Plan of Operation (PO) agreed upon at the time of the Project's commencement, due to delays in the construction of the hospital built with grant aid, full-scale onsite training was not possible until the second year of the Project (May 2019~). This has caused a review of the content and schedule of the technical assistance originally planned for the Project.

The Mongolian side's budget allowance was also affected by the delay in the opening of the hospital, and as a result, MJH was unable to receive the full amount originally planned, and was unable to employ all the necessary staff and procure the necessary materials and equipment. Therefore, the Project supported the formulation of regulations, manuals, etc., and the implementation of simulations through training in Japan and on-site training, so that the hospital could be opened smoothly when building was handed over and the preparation on the Mongolian side was done. As a result, MJH was able to open the outpatient services in October 2019.

On the other hand, the outbreak of COVID-19 at the end of 2019 made it difficult for Japanese experts to travel to Mongolia and for trainees from Mongolia to visit Japan for training. Therefore, the Project conducted technical transfer by holding consultations and conducting monitoring through an online system. The experts' travel resumed in March 2021, resulting in a period of absence of the experts for more than a year. As a result, the Project Design Matrix (PDM) and PO were reviewed, including the extension of the Project implementation period. A comparison of planned and actual POs is shown in Annex 1-4. See also Annex 1-5, “Flowchart of the Project Implementation”.

(1) Preparation and discussion of work plan (second year)

The second year of work in Mongolia started on 20 May 2019. Information was collected on the efforts by Mongolian side, the implementation system, and the situation of the handover from the grant aid project toward the opening of MJH, and a detailed activity plan was reviewed and prepared as a draft work plan (second year). The draft work plan was presented to JICA and the Mongolian side, and finalized based on their feedback.

(2) Activities related to Output 1

1） 1-1-4: To develop pre-service and post-graduate training systems for medical professionals.

JICA implemented the “Project for Strengthening Post-graduate Training for Health Professionals in Primary and Secondary Level Health Facilities” (hereinafter referred to as “Post-Graduate Project” with the MOH and the Center for Health Development (CHD) as the main counterparts for 5 years from May 2015 to December 2020. This project aimed to strengthen post-graduate training for primary and secondary level medical personnel, and included the development of criteria for the designation of training hospitals and evaluation tools, the development of an international-level training curriculum, the training of clinical training supervisors. In addition to providing support for general practice training at regional level hospital in Mongolia, the project also trained new nurse supervisors.

Based on the results, Phase 2 “Project for Strengthening Post-graduate Training for Medical Doctors and Nurses (January 2021 - January 2025)” is being implemented to further expand the general practice training program implemented in Phase 1, improve the quality of post-graduate education for newly graduated nurses, and support the Mongolian administration in strengthening its management capacity regarding the human resource development.

The Project exchanged opinions with experts from Post-Graduation Project as required, and utilized their information when considering the intervention plan. In particular, the Project made efforts to implement post-graduate education and nurse training based at MJH and support for MJH staff to participate in training for supervisors/nurse training of trainers (TOT) and facilitators. It was important to continue the exchange of information between the two projects in order to improve the post-graduate training system for medical staffs at MJH and to promote activities to strengthen its "educational" function as a teaching hospital.

The functions required of MJH as a university hospital are medical services, education, and research, and the establishment of a post-graduate training system for healthcare professionals is an important element.

In Mongolia, there are two streams of post-graduate training, which led by MOH and MEDS respectively, and the issue is how to unify them in the future. Although there is a movement to unify the MOH and MEDS, the reality is that there has been little progress because more than 90% of Mongolian doctors are produced by MNUMS, the budget of MNUMS is covered by tuition fees from students and residences, and the training currently provided by the MOH is basically free, so if the two institutions were to be unified, MNUMS may not be able to collect tuition fees for training. The Project has repeatedly explained the roles and responsibilities of the Ministry of Education, Culture, Sports, Science and Technology of Japan and also the Ministry of Health, Labor and Welfare of Japan to MOH and other officials of Government of Mongolia on several occasions, and has continued to work toward unification. As a result, the position of the chairperson of MNUMS board was changed from MEDS to MOH state secretary, and the MOH's intentions are now reflected in the MNUMS activity policy.

As for post-graduate training at MOH, as mentioned above, the Post-Graduate Project is being promoted in collaboration with MOH and CHD. MJH also provides training in general medicine and has accepted four general medicine residents per year since last year. MEDS training program is led by MNUMS, and can be divided into three main parts.

Table 6 Outline of training by MNUMS

Under-graduate education (in general education): The Department of Under-Graduate Education is in charge of the training, which is conducted for a total of 10,000 students currently enrolled at MNUMS and other facilities such as nursing. The department recognizes the importance of clinical training in hospitals, with the aim of improving the quality of training. For medical students, from the 6th year, MNUMS contracts with 14 hospitals for a 1-2 week of rotation.
Post-graduate education: The Department of Postgraduate Education is in charge of this program. For training related to master's and doctoral programs, the training program is conducted by MNUMS, which is separate from CHD's general training program. For this reason, CHD comprehensive training is not conducted at MNUMS, and the certification of the same instructors is also conducted by CHD, independent of MNUMS.
Specialized Education: The Center for Professional Improvement is in charge of medical specialists and faculty instructors/medical advisors. Currently, there are 32 specialties (40 in the future) with curricula/programs for residents and faculty instructors/medical advisors (revised annually as needed). Although the center has a curriculum and programs, quality improvement is an issue, and the establishment of a training system centered on MJH is a priority.

Source: Project Team

On the other hand, the department in charge of training at MJH is the general affairs, human resource development and training department. There are two persons in charge of training, and they perform the following tasks:

- Training for new employees (orientation, primary life-saving measures, infection control, risk management, etc.).
- Received residents from MNUMS (21 departments, 1 resident in each department, 900 post-graduate trainees in the past year)
- Acceptance of training on general physicians

Issues include the lack of prior communication although residents are sent without adequate prior coordination with the MNUMS faculty oof medicine, and the small number of supervisors relative to the number of residents. Therefore, in order to improve the quality of training in the future, it is necessary to (1) strengthen communication between MNUMS and MJH (establish a mutual system for training), (2) improve communication and functions at MJH (currently, only schedule coordination), and (3) train clinically skilled trainers.

2) （Activity 1-2-3）To develop a hospital management plan (budget/revenue and expenditure management, personnel management, etc.) on the basis of the knowledge and experiences acquired through the Training in Japan.

Since May 2019, the Project has supported, monitored, and given advice for overall hospital

management as well as its budget and revenue/expenditure control until COVID-19 became epidemic which makes direct support on-site difficult. Due to the restriction of foreign travel under the spread of COVID-19 in March 2020, the Project support was shifted to remote online meeting style, which was continued until onsite assistance in this activity was restored in September 2021. The meeting has been regularized and attended by the Deputy General Director for Finance and Administration and respective departments such as planning/monitoring, accounting, reception/statistics, and Supply Processing and Distribution (SPD). In a series of remote basis online meetings for this activity, the Project attempted to identify and provide advice on the financial issues of MJH. In January 2021, the Project introduced the management method in the format named 'the Service performance comparative management form' (See Annex 1-6: in Mongolian), which has been used by MJH since then. The budget performance has been monitored regularly as well. In addition, as shown in Table 7, a series of remote training for this activity was conducted from August 2020 (4 sessions in total).

Table 7 Training on finance-related subjects (online)

Date	Contents	Participated departments	Number of participants
11 August 2020	Revenue Sources of the University, Medium-term target/plan and annual plan, accounting, planning, budget management	Planning and Monitoring Department, Accounting Department, Legal section, External Affairs section	14
18 August 2020	Contracts, Ordering/ inspection, payment and credit management, debt, cash management	Accounting Department, SPD Department, Legal section	15
25 August 2020	Accounting rules, budget/ accounting/ treasury/ asset management, the responsibility and delegation of authority for contracts, variety of contract	Accounting Department, SPD Department, Legal section	10
31 August 2020	Internal audit, Internal control, assessment	Planning and Monitoring Department	4

Source: Project Team

Including the above 4 sessions of the training, 95 online meetings in total were conducted for this activity. Such as the online meeting for SPD held on 23 June 2022, direct assistance on-site has been conducted to each related department for this activity during June and July 2022. After the training session in Japan in August 2022, the final meetings were held with related departments to conclude the support on an online basis in September 2022.

As for budgeting and its management, the Project kept advising and assisted MJH to prepare the work process in a certain visible format including how the planning/monitoring department can work with each department to prepare an individual budget. The Project also advised how to prepare for the subsidy budget, focusing on including relevant items for it.

The following is the budget for FY 2019 which was planned by MJH.

The budget was planned to total 8.0 billion MNT, which consisted of 3.2 billion for the running cost (recurrent budget), 2.3 billion for the investment budget, 1.3 billion from the Health Insurance Fund, and 1.2 billion from its revenue sources. Nevertheless, the investment budget was not allowed to be

executed during the fiscal year. As for the insurance fund, MJH was not certified for the health insurance scheme until 1 October 2019, the insurance funds were obtained only after that month.

In FY 2020, the budget was prepared and changed during the fiscal year as planned, approved, and revised amount as shown in Table 8 during the fiscal year. The revision process of the budget was engaged by MNUMS.

On 18 March 2020, the Mongolian cabinet decided that MEDS was the responsible organization to manage MJH taking over from MOH. The change came along with an extra budget of 8.0 billion MNT for MJH from MEDS on top of the original 2.3 billion MNT budget for running costs from MOH during FY 2020.

Table 8 Budget for FY 2020 (Planned, Approved, Revised amount)

Unit: 100 million MNT

	Running Cost [Recurrent Budget]			Investment Budget	Total
	Government Source	Health Insurance	Own Sources		
Planned	50	90	39	143	322
Approved	12	33	0	23	68
Revised	12	116.5	29	23	180.5

Source: Project Team

While shifting the budget plans of MJH as Table 8, the actual running cost for FY 2020 totaled 14.75 billion MNT. Incidentally, the result of the external audit for MJH for the FY 2020 was the worst case, i.e., 'Disclaimer of Opinion', which questioned the responsibility of MJH's Director and the head of the accounting department. The actions to address the issues indicated by the external audit reports had been conducted since FY 2021 especially new management team of MJH was appointed and formed.

The health financing system was changed to a performance-based health insurance scheme which is the main source of revenue for all the hospitals (ADB has supported this shift of the system). MJH is still able to obtain a subsidy budget portion through MEDS. However, it has been questioned if the newly established and unstable MJH is manageable in such a new system in which MJH may cause a deficit balance of payment. The budget plan and its revision during the fiscal year 2021 are shown in Table 9. Note that the Investment budget has not been planned since 2021.

Table 9 Budget for FY 2021 [Planned, Approved, Revised amount]

Unit: 100 million MNT

	Running Cost [Recurrent Budget]			Investment Budget	Total
	Government Source	Health Insurance	Own Sources		
Planned	93	84	27	20-	204
Approved	35	236	16	—	287
Revised	35	95.7	11.3	—	142

Source: Project Team

To grasp management information of MJH, the Project introduced above mentioned 'Service performance comparative management form' in January 2021, which has been used at Tokushima

University. The form is able to manage information, see the balance, and compare with the past year's information on cash revenue as well as generated revenue, i.e., the receivable income from the health insurance fund. The form also shows the bed operation ratio, the number of out-patients, the cases of operations, performance of each medical department. The form is therefore used as the source of management information, especially under the new health financing system. The form has been used and updated by the planning and monitoring department till the end of the Project since its introduction.

The actual running cost for FY 2021 was 13.95 billion MNT excluding the receivable health insurance amount which is carried over to FY 2022. The result of the external audit for FY 2021 was the best in the 4 levels, 'Unqualified Opinion', and the audit acknowledged that MJH had cleared all the accounting-related issues indicated in the previous year.

The subsidy budget portion of the FY 2022 budget of MJH was strictly assessed. MJH prepared the documents and explained them to MEDS and the Ministry of Finance, however, it resulted in a decrease in the subsidy budget. As the budget would be prepared under MNUMS from FY 2023, the subsidy budget is expected to be scrutinized severely in terms of the purpose of the budget that fits the teaching hospital concept. The Project advised MJH to guide each department to indicate suitable plans for the subsidy budget in the budgeting process. Otherwise, MJH should have a certain department or unit which mainly deals with the subsidy budget proportion in planning. For FY 2023 budgeting process, MJH took the former option.

Toward the end of the Project, the whole the Government of Mongolia was in the process of the revised budget approval of FY 2022. MJH has proposed the revised budget as shown in Table 10 below.

Table 10 Budget for FY 2022 [Planned, Approved, Revised amount]

Unit: 100 million MNT

	Running Cost [Recurrent Budget]			Investment Budget	Total
	Government Source	Health Insurance	Own Sources		
Planned	81	148	30	—	259
Approved	30.8	150	46	—	227
Revised	29	138	21		188

Source: Project Team

Since August 2021, the government has reviewed the responsible organization for MJH and decided MNUMS be the one shifting from MEDS. The Cabinet approved it on the 9th of February 2022. The management plan of MJH was agreed upon by the Minister of MEDS, Principal of MNUMS, and the Director of MJH in the form of a 'Performance contract'. As for the contract of 2022 under MNUMS control, the 'Outcome contract' was signed between the principal of NMUMS and the Director of MJH. The outcome contract is understood as an annual plan of MJH. To prepare and form MJH's contract document, each department of MJH refers to and follows MNUMS's development plan.

Later in 2021, the Director of MJH announced internally to prepare its business plan, which was also supported by the Project. While the Project offered and discussed with MJH relevant directors the framework of the plan, MJH set its working group. However, the resignation of the working group head

suspended the preparation work for several months. In June 2022, new working group co-heads, the Deputy Director for Medical Services and the Deputy Director for General Affaires, Finance and Services, were appointed to continue the work using the bottom-up approach. As they planned to apply the 'Objective, Goals, Strategies, and Measurements' (OGSM[4]) method, the Project offered the presentation materials for the work using OGSM and its possible framework for the MJH case. MJH organized the internal meeting session on 29 July 2022 inviting all heads of medical departments to define the working condition in terms of medical equipment and human resources and requesting them to inform the situation to consider what coordination is possible to provide further services. Nevertheless, enough information on it was collected as of September 2022. The Business plan is expected to launch in FY 2023 linking with the annual budget plan.

Some issues around human resource management were seen as the decrease in the number of staff due to the independence of the department of traditional medicine in 2021. It was accompanied by a decrease in the number of beds which made MJH 104 beds. The total number of staff was 489 as of 2020 out of 520 in the regulated number of employees. In 2020, the full-time staff was 360 and the contracted doctors and others were 129, a shortfall of 31 (16 nurses and 15 technicians' positions).

The partition of the department of traditional medicine decreased the number of staff as well. Recruit process is ongoing using the website for medical personnel. As for the attendance controls, the finger authentication system was applied to medical departments, while administrative departments were controlled by each head. Overall attendance information management is under the responsibility of the department of human resources and training. The systems that the department uses are one for the CHD and the health insurance agency payment system. In addition to that, the public servant's human resources system and Enterprise Resource Planning (ERP) of MNUMS are used at the same time. It is expected that Axis Karte[5] is applied to standardize all these different functions of different systems.

Current issues identified by the Project toward the end of the Project are as follows: the increase of staff to strengthen the organizational system; and the provision of better care for the patients with a quality service attitude by the staff of MJH. The Project advised the Deputy Director for General Affaires, Finance and Services to plan the training concerning the above needs.

3)	Activity 1-2-4: To provide technical support in bylaws-based practical operation newly established divisions such as the health support division and the ME division.

As for the health support sector, Mongolia's first "Patient Support Center" was established and began operations with the opening of outpatient services in October 2019. The functions and roles of the patient support center have already been explained to the participants in the first year of training in Japan (the 1st, 2nd, 3rd and 7th training courses), however, due to personnel changes and resignations, the personnel

[4] The project formulation to consider using four frameworks: Objective (purpose/ vision of the business); Strategies (strategies/ actions for the purpose of the project): Goals (goal setting/ targets for each strategy); Measurements (Indicators of achievement of the purpose/goals to assess)

[5] Cloud-based hospital information systems were introduced in MJH. See 'Activity 1-2-5' below for more details.

at the center has not been stable, and knowledge of the Japanese-style patient support has not been disseminated. Therefore, in November 2019, the 11th training in Japan (Team Approach: Patient Support Center/ICU) was held for three members from patient support center. In the training program, the role of the patient support center in Japan was explained again, and the role of the patient support center in MJH was discussed. An outline of the training is shown in Table 8.

Table 8 Outline of the 11th Training in Japan (Patient Support Center)

Name of course	Team Approach (Patient Support Center/ICU)
Training period	Monday, 25 November (Mon), 2019 - 29 November (Fri), 2019 (5 days)
Trainee (Patient Support Center)	Dulamjav Erdenechimeg (Director, Patient Support Center) Batjargal Khishigjargal (Nurse, Patient Support Center) Tsedendamba Dolgorsuren (Public Health Officer, Patient Support Center)
Training Objectives	To understand the significance and role of the Patient Support Center, the first organization of in Mongolia, and to reconsider the role of the Patient Support Center at MJH and to develop an operational plan.
Training Items	(1) Bed control - Introduction to bed control manual - Basic concept of bed control, operation methods, and operations - Workflow during weekdays, night and holiday - Discharge support (2) Regional collaboration - Support for medical treatment and discharge - Coordination with Related Organizations (3) Patients Consultations - General consultation, nursing consultation, and homecare consultation and welfare consultation - Specialized consultation (cancer, intractable disease, liver disease, etc.) - Special consultation (genetic counseling, second opinion, outpatient nutrition, etc.)

Source: Project Team

Currently, a patient support center accepts consultations from patients and collects complaints and claims from patients through opinion boxes located on each floor of the outpatient department. Complaints and claims are rated on a five-point scale according to their content, and important cases are reported to the risk management department and other relevant departments for action. After the opening of the internal medicine ward in September 2020, the center has been functioning as a contact point for admission and discharge procedures, as well as for bed control. During the travel restrictions caused by COVID-19, Japanese experts have been monitoring and giving advice on their work online. Once the travel restriction was eased, the Japanese experts provided technical guidance through on-job-training (OJT), as well as worked on developing a plan to improve operations as a patient support center, and strengthened cooperation among the various departments. As a result, the basic patient information forms have been standardized, participation in the transfer from the night shift to the day shift implemented in the nursing department (within the patient support center), visualization of bed control on PCs, etc.

The department for medical engineering (ME) is the medical equipment department. This department

is responsible for the maintenance and management of all equipment provided and delivered to MJH. Before the spread of COVID-19, technical guidance was provided regarding procurement of equipment and consumables, confirmation of compensation period and coverage for each piece of equipment, maintenance of operation manuals, inspection work systems, and communication systems in case of malfunction. In addition, although training was provided by the local agency for doctors, technicians, and other users of the equipment provided by the grant aid project, training related to the maintenance and management of the equipment was rarely provided to biomedical engineers (BMEs) assigned to the department, and the proper management of the equipment was not understood by them. Therefore, the Project offered training programs to local agents and made other efforts to strengthen cooperation between the medical equipment department of MJH and local agents. The Project also provided support to encourage the conclusion of maintenance management contracts with distributors. Furthermore, the implementation of team medicine, including BMEs is important for MJH, which aims to provide global standard medical services, in view of the role of "ME" in Japan, a BME from the medical equipment department was enlisted for the 10th training in Japan (Team Approach: Surgical Department)[6]. The training included instruction on maintenance of blood gas analyzers, advance preparation of medical equipment for operating theaters, sterilization process of surgical instruments, and facilities and equipment related to infection control.

Although the Project have continued to implement the technical transfer described above, due to COVID-19, Japanese experts for a ME has not been on site for two years, and staff changes have occurred. During a field training in July 2022, it was found that only two of the eleven staff members who had received instruction before COVID-19 were remained. Therefore, during the on-site training, technical guidance was again provided to strengthen the management of the medical equipment department in Japanese-style hospital management and to enhance its capacity for equipment maintenance and management operations.

4） 1-2-5: To support the medical informatics division to promote practical introduction of IT system(s) in accordance with the strategic plan.

With regard to the introduction of IT systems, various issues were found when the hospital information system (HIS) was operated in the pre-opening simulation. Particularly significant issues were related to revenue procedures, such as double payment of medical fees from patients and free reimbursement in the aggregate. Factors included bugs in the program and hospital did not approve for reimbursement. To address these issues, some operations were converted to paper-based operations, development of particularly critical ones was accelerated, as a result of which outpatient services were launched.

In January 2020, a joint survey was conducted with MNUMS and MOH to determine the status of

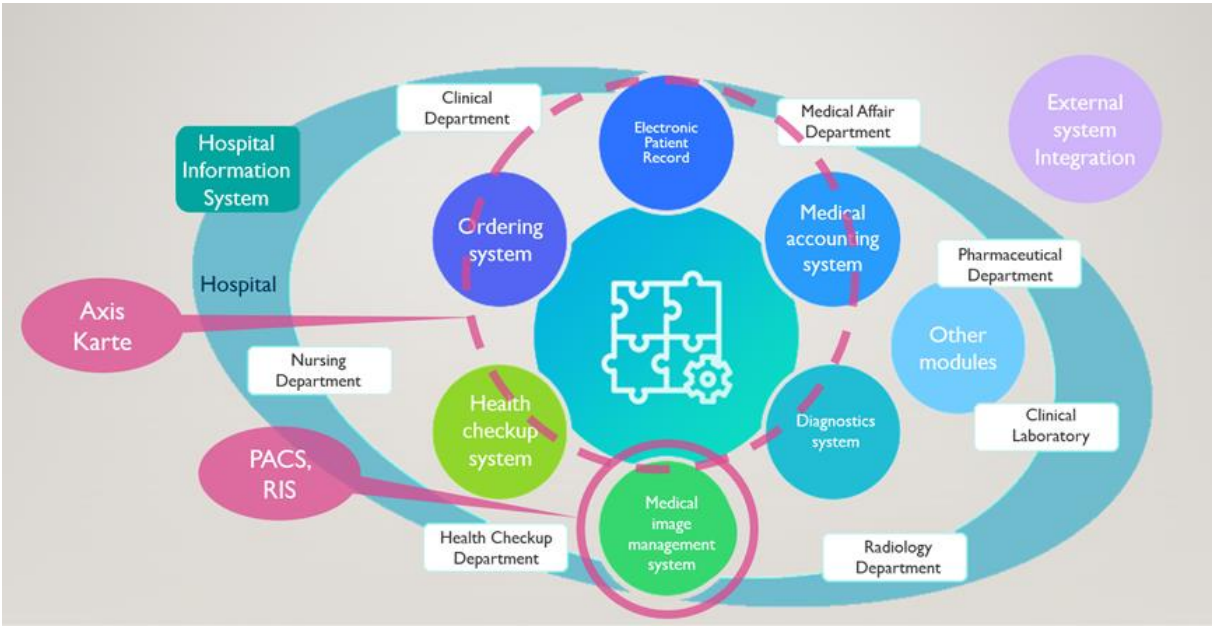
[6] In Mongolia, "biomedical engineers" are personnel who maintain and manage equipment, support procurement and registration, and provide operational guidance to medical personnel. In contrast, " medical engineers" in Japan are personnel who operate anesthesia machines, ventilators, and other equipment in operating theaters as members of the medical team.

HIS development. During the same survey, several minor issues were identified with regard to outpatient-related systems. It also identified some underdevelopment with regarding systems related to inpatient wards and surgical services. For example, (1) medical records for inpatient had not been developed, and (2) appointment and accounting functions for tests and procedures during stays in the hospital had not been developed. Major inhibitors to development include the insufficient system for operating medical records in wards and method for booking and paying for various tests and treatments. It was not possible to fully develop the system at the current stage, when the operational method had not been finalized, for the start of the wards. Therefore, it was agreed with MNUMS and MJH executives that (1) ward services would be started on a paper basis and (2) system development and implementation would be scheduled once the operational method was finalized (implementation to start in late 2021). Due to the delay in HIS development, six additional programmers were hired in early July 2020, and these programmers were used for the time being to develop SPD and accounting functions required for both outpatient and inpatient wards. In consideration of the progress of the development, it was agreed with the Mongolian side that the functions were implemented in phases as shown below.

- July 2020 - June 2021: Implementation of financial, accounting and SPD related systems
- July 2021 - June 2022: Implementation of ward and surgical related systems

The development of the system requires close consultation between users and developers. For this reason, a Working Group (WG) was organized in August 2020 for the development of systems related to finance, accounting, and SPD. Similarly, a WG also supported development of ward and surgical related systems in July 2021. In addition, a local IT advisor was appointed in early September 2020 to ensure proper use of IT in the hospital. However, from July 2021, the MOH's billing system changed, requiring the HIS to be connected to the MOH's system to enable real-time billing of insurance policies. MJH decided to stop developing its own HIS because it did not possess the functionality to accommodate real-time billing in the system. Therefore, a WG was established to evaluate the various systems developed by vendors in Mongolia, and it was decided to introduce Axis Systems' cloud based HIS system (Axis Karte).

On 1 April 2022, a contract was signed between MNUMS and Axis Systems to focus on the development and operation of HIS, with Axis Karte. An image of the overall HIS and an overview of the modules covered by Axis Karte (inside the red dotted line) are shown below.



Note: PACS (Medical Image Management System), RIS (Radiology Information System)
Future development will be required for the areas outside of AXIS Karte (inside the red dotted circle).
Source: Project Team

Figure 3 Diagram of the Overall HIS Concept in MJH

The following table shows the HIS modules covered by the existing Axis Karte and the modules planned to be introduced in the future.

HIS module covered by Axis Karte			
Profile	Employee Profiles	**Schedule of Surgery**	List of Surgical Patients
	Patient Profiles		Working Time Records of Surgical Team
Nutrition	Employee Lunch Record		Form
	Nutrition-Related Reports		Consumption Processing of Surgical Drug and Equipment
Personnel Affairs	Organizational Structure	**Ward**	Inpatient Registration
	Occupation and Position		Exam Report
	Employee Information		Order for Examination, Diagnosis, and Review
	Access Permission		Medical Prescription
	Employee Electronic ID card		Nursing Record
Service	Service Registration		Order of Medicines and Medical Devices
	Medical Examination Schedule		Consumption Processing of Anesthesia Drugs and Medical Supplies
Statistics and reports	Outpatient and Ward Reports		Medical History (as per Form 611)
	Service Order Report		Collaboration between Pharmacy and Quality Department
Health Insurance	Insurance info. sent to HIS	**Laboratory**	Examination List
	Hinfo		Specimen Acquisition and Barcode Printing
	Insurance Package Reports		Input of result and confirmation (manually, device)
	Request for Discounted Medication		Indicator Record, Result Constants, Device Connection, Barcode Setting
Payment	Customer Payment History		Laboratory Report
	Repayment	**Clinical Record**	Physician Examination (Outpatient and ECU Physician Examination)
	Statement of Cash Flows		Order for Examination, Diagnosis, and Review
	Service Payment Report		Order Discounted Drugs
Blood and Blood products	Order		Pathological Examination
	Supply		Service Authentication（Services that produce results from the device-endoscopy, radiology, etc.）
Use of Medicines	Registration of Medicines and Medical Devices	**Reception**	Order for Examination, Diagnosis, and Review
	Order of Medicines and Medical Devices		Payment
	Supply of Medicines and Medical Devices		Passing on the results

Modules to be introduced (added) in the future	
Nutrition	In-patient Meals
Medical Certificate	Write a Medical Certificate Online
Inpatient Reservations	Make reservation for hospitalization from an outpatient physician.
Reception Order Guide	Reception staff calls for order from the Karte system
Documents	Archive
	Contract
	Official Document Input

Source: Project Team

Table 9 HIS Modules in Axis Karte

The standard regulations pertaining to medical information that had been established by the medical information technology department were formulated on the premise of building an independently developed HIS, and thus needed to be revised in an appropriate manner. Therefore, during a site visit by the Project team member (IT specialist) in mid-June 2022, an audit was conducted to ensure that the system was being operated in accordance with the standard regulations, and advice was given on points that should be revised. The following are the regulations audited.

- Rules for using hospital servers
- Rules on the use of e-mail in the hospital
- Rules on data processing management
- Rules on information security
- Rules on the use of anti-virus software
- Rules on the use of HIS

Although it was desirable to have a radiology information system (RIS) in place at the time of hospital opening, it was difficult to confirm the details of the HIS specifications necessary for linkage because the HIS being developed on the Mongolian side was still under development. Therefore, the Japanese experts proceeded to provide support under the assumption that RIS would be operated on the paper basis at the time of the hospital's opening, and that it would be constructed later. The initial plan was to finalize the RIS specifications during the second year of training in Japan. However, assumptions were changed significantly with the introduction of Axis System's cloud based HIS, as mentioned above, in addition to travel restrictions due to the effect of COVID-19. Discussions were held on how to connect Axis System's HIS and RIS, based for the reason that it would be best to connect to RIS using the HL7 standard, which is the most effective international standard when considering the operation of hospital systems in 5 to 10 years. Despite the initial agreement from the president of Axis System that the connection could be established with HL7 without any problems, the president of Axis Systems later informed the Project that the connection with HL7 would be difficult due to security issues and other reasons.

Therefore, in light of the Project implementation period, the Japanese experts held discussions with the radiology department of MJH to confirm how RIS should be operated, what the minimum requirements were, and what information needed to be provided to the insurance authority in order to obtain public insurance, and decided to develop a customized RIS that would meet the current situation at MJH, rather than a RIS that had been implemented in Japan. Specifically, RIS data is stored on the PACS storage server in the form of JPEG images and HTML reports, and the Axis Karte side imports data from the storage server via an Access Point (AP). The Project provided implementation support up to the storage server. Beyond that point, the scope of work will be that of Axis Systems. The implementation of the RIS was completed in early September 2022.

The hospital network has frequently failed, causing HIS terminals to be disconnected. The cause is due to a bug in the DHCP system or a change in network settings by staff members. In order to prevent such a situation in the future, it is necessary to re-examine the redundant configuration of the network. In addition to configuration and equipment, there is also the problem of human error, which is a human problem, and therefore, clear procedures and thorough handover are required. Since the medical information technology department did not have a network specialist and it is difficult to hire one, the Japanese experts suggested that the operation of the network be outsourced to an external firm in the future. As a result, the former network staff of medical technology information department now visits the hospital as needed to check the network. However, more frequent visits are needed for proper

maintenance.

When the PACS server was transferred, the Japanese experts assisted in preparing for the transfer from CIT[7] to the medical technology information department.

In order for MJH to take over the PACS from CIT, the Japanese experts obtained PACS-related documents from PSP[8] and shared them with MJH, since PACS must be taken over from CIT without any mistakes and the assets must be registered at the time of takeover.

5) （Activity 1-2-6） To develop a physical distribution management system (PDMS) for medicines, medical materials, consumables, and office supplies.

Concerning the internal supply management system of MJH, the Project assisted to introduce a comprehensive SPD system which would be the first in Mongolia. To do that, the Project advised MJH on how to improve the system by examining a series of simulations of stock management of supply goods and medicines, the flow of supply from the store to the Outpatient wards, the timing of replenishing and ordering, and the flow of moving contaminated items. The Project also advised the inpatient words and ICU unit to prepare for its launching through a series of online meetings continuing support through examination of the stock situation and issues of goods and medicines as well as restocking from the suppliers.

As shown in Table 10, the Project conducted the training session for SPD-related departments' personnel during July and September 2020. Issues around the resignment of SPD staff the Project supported, late supply to the other department, and less coordination among the departments continued. The Project kept informed about the procurement of goods and medicines, and coordination issues among departments. The Project continued advising and guidance for the issues from SPD's point of view.

Table 10 Summary of SPD Training

1st SPD training			
Date	Thursday, 9 July 2020: 11:00 ~ 13:00		
Participants	- SPD Department head - Pharmaceutical Department/ Pharmacist	- Accounting department: Accountant - Medical Information Technology Department Head	- Medical Information Technology Department IT advisor
Contents	- The procurement and ordering process of goods by SPD - Management of fixed assets (Fixed asset ledger, Depreciation, Classification of the goods, Management method, and Inventory) - The work of SPD (Contract of SPD work, the management cycle of constant number of goods)		
2nd SPD training			
Date	Tuesday 28 July 2020: 10:00～11:30		
Participants	- Deputy General Director for Finance and Administration - SPD Department Head - Deputy Department Head of Nurse section	- Planning and Monitoring Department: Economist in charge of budgeting - Medical Information Technology Department: System Analyst	

[7] Local agent for medical equipment provided through grant aid project.

[8] Japanese vendor that provided PACS under a grant aid project.

	- Accounting Department: Accountant in charge of Revenue - Medical Information Technology Department: Data Analyst
Contents	- Approval process of urgent purchasing goods under Medical Goods Committee - Sharing the proposed list of goods for purchasing among related departments - Sharing the rules under preparation among related departments - Purchase and management structure for goods (dividing the structure for purchasing and management) - Development of SPD Modules (Stock management, Record management of purchased prices, management concerning requests and distribution between each department and SPD, management of usage of goods for each patient)
3rd SPD training	
Date	Monday 17 August 2020: 14:00～16:00
Participants	- General Director - Deputy General Director for Medicine - Deputy General Director for Finance and Administration - Deputy General Director for Quality Control - SPD Department Head - Accounting Department Head - Pharmaceutical Department Head - Nutrition Department Head - Deputy Department Head of Nurse Section - Medical Information Technology Department: System Analyst - Medical Information Technology Department: Data Analyst - External Affairs Expert
Contents	- Purchase, delivery, stock, and internal delivery of medical goods, medicines, and other consumables in MJH - The cases of Tokushima University - Discussion of the issues and way forward
4th SPD training	
Date	Wednesday 19 August 2020: 15:00～16:30
Participants	- Deputy General Director for Medicine - Deputy General Director for Finance and Administration - SPD Department Head - Nutrition Department Head - Pharmaceutical Department Head - Medical Information Technology Department Head
Contents	- Establishment of the management structure for procurement and delivery of goods to launch medical wards - Management of goods and stocks
5th SPD training	
Date	Wednesday 16 September 2020: 11:00～13:00
Participants	- Deputy General Director for Finance and Administration - SPD Department Head - Nutrition Department Head - Deputy Department Head of Nurse Section - Chief Nursing Officer for Ward 1 - Chief Nursing Officer for ICU - Facility Department Head
Contents	- Situation of expansion of the store for stocks, ordering of goods to the suppliers, issues to confirm after launching services of hospital wards - Confirmation of Facility management structure (division between the estates of MNUMS and MJH, the gate, the division of the parking for the patients and staff, flow of the patients from the bus stop to MJH, management of facilities on the roof) - The cases of Tokushima University

Source: Project Team

As the SPD system has been planned to be a part of HIS, the development of HIS was aborted unexpectedly in 2020. SPD was therefore managed on paper-basis ordering and procurement. Later 2021, HIS was shifted from using the underdeveloped system to applying the Axis Karte system which Axis System Company provides. However, Axis Karte does not implement the function of accounting and supply management. SPD department had to keep using an accounting system called 'UNICUS[9]' for

[9] Hospital accounting system developed by a local vender in Mongolia.

stock management. As of June 2022, Axis Karte can provide medical goods consumption information of medical services for each patient. Nevertheless, it is expected to develop Axis Karte further to operate the whole SPD management needs (See Figure 3 for the whole HIS structure of MJH).

From early 2020 until mid-2021, direct project support was not conducted due to COVID-19, the support for SPD was partly done on an online basis in the meeting for financial management (See Activity 1-2-3). To support SPD on a remote basis, the Project firstly advised and provided a revised supply management format using an Excel form for stock information of the store and usage of goods in medical departments, which was applied in the interim. In July 2021, a new department head of SPD was appointed. The Project focused on the best usage of UNICUS for stock management as SPD kept taking inventory efficiently using it to have precise information about goods. This resulted in the best appraisal by the third-party external audit in early 2022 since no gap was found in the information of goods in the system and actual ones on the stock.

One of the issues identified was the time gap and accuracy of information of stocks in the medical departments when these are consumed at their end while Axis Karte captures the proper information when the goods are supplied to the medical departments. This may cause out-of- stock of goods both in SPD stores and on medical departments' shelves. For this issue of less function of automatic stock count in Axis Karte to address, SPD staff count and calculate stocks directly. Less precise and timely capturing of goods is expected due to the issue of possible human errors and inadequate function of HIS.

Before the new SPD management was appointed, MEDS's subsidy budget totaling 8 billion MNT was provided toward the end of 2020 as mentioned above. The budget was quickly executed to purchase a huge amount of supply goods. However, these supplied goods were either unnecessary or improper ones, which were also questioned by the external audit. New SPD management under a new department head, therefore, had to cope with the issues since its inauguration toward the end of 2021. SPD negotiated with the contractors for possible revision of contract documents, replacement of unnecessary goods with necessary ones, or even selling out to other hospitals (Note: the procured goods purchased at multiple higher prices were not possible to sell out in Mongolian regulation). Even in the procured goods in FY 2021, of which purchases were approved by the former MJH administration, there are lots of unnecessary goods. New SPD management had to negotiate with suppliers to change contracts, which worked well to save 1.4 billion MNT. The key issue of SPD is that SPD alone is not able to judge the necessity of requested medical goods. Therefore, it is understood that SPD brings certain measures such as the medical goods committee[10] to address the gap between requested goods and actual needs in each medical department.

Towards the end of the project support, SPD raised urgent issues: (1) the method for emergency procurement under the COVID-19 situation as such; and (2) the absence of the rules for urgent purchases such as in emergency operations. The project assisted to solve the matters by having a series of online

[10] In Japan, the committee is formed from various departments to prepare, approve and conduct annual procurement plan at the beginning of each fiscal year.

meetings and guided SPD by sharing the cases of Tokushima University's rules. This resulted in the preparation of new purchase rules by the SPD department to submit to the MJH management for approval.

(3) Activities related to Output 2

1) Activity 2-1-1: To conduct Trainings in Japan for patient management (team-approach, standardization of medical services, risk management, etc.) geared to eligible medical professionals.

Hospital management related to patient management, such as team approach, standardization of medical services, and medical safety, has been continuously provided through a total of nine sessions of training in Japan and on-site training conducted in the first year of the Project. These are the core of patient-centered medical services. In the second year, based on the technology transfer that had been conducted previously, Japanese experts provided guidance based on simulations in actual hospital environments, especially in preparation for the opening of MJH, as well as technical support for the provision of medical services after the opening, prior to the expansion of COVID-19 (See "Activity 2-1-3" for details on technical transfer through simulation).

Regarding team approach, in addition to on-site training in the simulation style, trainings in Japan (10th and 11th) were conducted for the opening of operation theater and wards. The outline of the 10th training in Japan is shown in Table 11. In addition to doctors and nurses from the surgery department, trainees from the anesthesiology and surgery department, medical equipment department, and infection control management department were invited to participate in the training, which was an opportunity to learn about the management system of operation theaters as a team. For the 11th training in Japan, as shown in Table 17; strengthening of the management system in ICU.

Table 11 Outline of the 10th Training in Japan (Surgical Department)

Name	Team approach (Surgery Department)
Training Period	18th November 2019 (Mon) ~ 22nd November 2019 (Fri) (5 days)
Trainee	Ganbold Tsolmontuya (Deputy Director of Nursing) Taivan Enkhzaya (Anesthesia and General Surgery, Nurse Dept.) Choijiljav Nyamlkhagva (Surgery Dept., Nurse) Dashdorj Munkhbayar (Surgery Dept., Head of Nurse) Sanjaa Burmaa (Surgical Director, Physician) Bayankhuu Dulguun (Anesthesia and General Surgery Dept., Physician) Myagmar Bumtsend (Medical Equipment Dept. Biomedical Engineer) Chuluunbaatar Bazardari (Infection Control Management Dept.)
Objective	For the start of ward operations with surgery and inpatient admissions, understand the proper operation and management of the surgery, and establish a team operational structure.
Topics	① Team system and multidisciplinary cooperation in surgery - Validation of operating room simulation at MJH - Operation and management of the surgical department (Role and duties of Director of Nursing and Head of Nurse)

	- Observation of an operation ② Preparation before surgery - Flow of delivery from the hospital ward to the operating room - Explanation to the patient, obtaining consent, and explanation pertaining to various consent forms - Observation of an operation ③ Sterilization and cleaning process of instruments after surgery - Observation of sterilization process, Sterilized material quality management system, Storage and management of sterilized instruments - Classification of various waste (General, industrial and infectious waste), Disposal flow - Control of clean areas ④ Nursing care in hospital wards (Decubitus prevention) ⑤ Maintenance of blood gas analyzers, troubleshooting (ME support)

Source：Project Team

As part of the medical safety program, a lecture on nosocomial infection control was given to newly hired staff in May 2019 in preparation for the start of outpatient services (it was already given to existing staffs in the first year). An outline of the lecture is shown in Table 12. In Mongolia, the hospital does not take appropriate preventive measures or properly report for incidents, as clarifying incidents due to nosocomial infections makes hospital trust and reputation lowered. Therefore, the Japanese experts advised MJH to strengthen prevention activities in the hospital and to understand the need to have a system in place in the event of an incident. As a result, training related to nosocomial infection control has been continuously planned and implemented by the infection control management department of MJH. From the perspective of prevention, an Infection Control Team (ICT), consisting of representatives from the infection control management department, as well as nursing department, administration, finance and services department, and SPD department, has been established to provide guidance once a week while making rounds throughout the hospital.

Table 12 Outline of Lecture on Nosocomial Infection Control

Date and Time	27th Many 2019 (Mon) 14:00 ~ 16:00
Participants	New staff at Mongolia-Japan Hospital (Hospital executives, Physicians, Nurses, Engineers, Pharmacists, etc.)
Lecture Content	- Responsibilities of the Infection Prevention/Control Department and its significance in hospital operations management - Infection control measures in respiratory infection - About Certified Infection Management Nurse Practitioner - Role of the Pharmacist in the Infection Control Department

Source: Project Team

Japanese experts introduced the “Hiyari-Hatto Incident Reporting Form (See Annex 1-7),” a tool for medical safety used in Japanese hospitals. This is a form used to summarize near-misses and incidents that did not become medical accidents but had the potential to do so, based on discussions not only among physicians and nurses, but also among the related general affairs department and backyard personnel (operational support staff), and to discuss future prevention and countermeasures. Since the form is compiled not only by the person concerned but also by all the relevant department members, it

has the advantage of fostering awareness of team approach through filling out the form and discussing the measures to be taken.

In Mongolia, reports of medical accidents and near-misses tend to be under-reported (or in some cases, non-reporting are also observed) because of a strong tendency to view such reports as material for personal evaluation and punishment, and a general belief that such reports will lead to a negative evaluation of the hospital. For this reason, the Japanese experts repeatedly instructed that the Hiyari-Hatto Incident Reporting Form is not intended to punish individuals, but rather is a tool to prevent medical accidents and contribute to medical safety. As a result, appropriate reports are now being made and have become firmly established. In the future, it is desirable to achieve uniformity in the level and quality of reporting by each department, and to categorize accumulated data and measures.

2) Activity 2-1-2:

(Version 1) To develop operational guidelines and introduction plan for team-approached patient management as well as capacity development plans geared to co-medical staff, on the basis of the knowledge and experience acquired through the Training in Japan.

(Version 2) To develop practical tools and communication system for team-approached patient management as well as capacity development plans geared to co-medical staff, on the basis of the knowledge and experience acquired through the Training in Japan.

In the 5th (Hospital Information System) and 6th (Hospital Management) trainings in Japan for the medical staff team and the medical engineering team in the first year, Japanese experts provided an opportunity to experience team approach in a Japanese hospital. The purpose of these programs was to have participants experience how doctors, nurses, and technicians work as a team to provide medical services to patients in MRI and CT, catheter interventions in the angiography room, and surgery in the operation theater, and to learn the necessity of team-based medicine from their own experience.

On the other hand, it is uncommon for Japan to have manuals and guidelines for team approach. Team approach does not simply mean working together to care for a patient; it begins with team members understanding what each other are doing now, and creating an environment that fosters an attitude and awareness of mutual understanding at all times is the most important aspect of building a team approach, which is the most necessary thing. Therefore, instead of establishing guidelines for the implementation of team approach, the Japanese experts decided to establish an in-hospital education system, that is, an environment that fosters an attitude of understanding and awareness toward each other at all times, and conducted training in Japan.

In response to these series of activities, the PDM was revised at the 5th JCC, held on 1 October 2021, from “to develop operational guidelines and introduction plan for team-approached patient management” to “to develop practical tools and communication system for team-approached patient management”. With regard to the development of practical tools and communication systems for team

approach, technical support was provided for the organization of the above-mentioned ICT, the introduction of a near-miss and incident reporting form, and the unification of basic patient information forms[11] used at the patient support center and hospital wards, which are now being used as tools for team-approached patient management at MJH and have led to the establishment of a communication system.

2） 2-1-3: To conduct in-hospital trainings for MJH staff on the team-approached patient management.

As mentioned earlier, for the technical guidance on team approach, based on the guidance provided during the training in Japan and on-site training conducted in the first year, support was provided in the form of simulations in the second year. For the start of outpatient services, Japanese experts supported the formation of a WG to systematically conduct simulations and to work as a team to discuss issues and improvement measures. As shown in Table 13, the group was headed by the deputy director in charge of medical services and the manager of the training and development department as deputy group leader, with representatives from all departments involved as members to enable the group to address issues across disciplines. After the formation of the WG, simulation planning and implementation, post-implementation review, and sharing of issues are systematically conducted throughout the hospital to promote team approach.

Table 13 Composition of Simulation Working Group

■ Head of working group：Deputy Director of Medical Services
■ Deputy head of working group：Manager, Training and Development Department
■ Members：
- Deputy Director of Quality and Safety Management
- SPD Dept. - Nursing Dept. - Reception
- Deputy Director of Traditional Medicine
- Medical Information Technology Dept.
- Pharmaceutical Dept. - Patient Support Center
- Infection Control Management Dept.

Source：Project Team

After the start of the outpatient services, travel restrictions due to COVID-19 made it difficult for Japanese experts to travel to Mongolia, and although Japanese experts were unable to directly confirm the practice of team approach on site, an environment was created to provide support in the form of an online system. Concretely, online meetings were held regularly with relevant departments to confirm the current situations and issues of the collaboration system on hospital site, as well as to provide advice on issues and questions confirmed by the Mongolian side on the actual hospital site. In addition, when expanding medical services, the implementation of the simulation was monitored, and advice was given through an online virtual tour. As a result, MJH was able to start services in the internal medicine ward and ICU in September 2021, and in the operation unit, surgery department and emergency medicine department in November of the same year.

[11] By using a single form for each patient, the different forms that have been used in different departments will be unified, and a sense of teamwork will be fostered by working together to fill out a form for a patient.

4） Activity 2-1-4:

(Version 1) To introduce the team-approached patient management to several pilot departments in accordance with the guidelines on a trial basis at the MNUMS General Hospital.

(Version 2) To introduce the team-approached patient management to several pilot departments by utilizing the practical tools and the communication system on a trial basis at the MNUMS General Hospital.

Activity 2-1-4 is an activity for the opening of MJH. For the same reasons as in “Activity 2-1-2”, the introduction of the team-approach pilot at MNUMS general hospital did not take the form of a "follow the guidelines", but focused on creating an environment for the team approach. For this reason, the Japanese experts have tried to transfer the technology through the implementation of training in Japan and simulations at MNUMS general hospital. The PDM for “Activity 2-1-4” was also revised at the 5th JCC, as was “Activity 2-1-2”.

As an example of intervention, the doctor team (radiology staff) who participated in the 6th training in Japan recognized the importance of team approach through the training in radiology imaging, and developed in the action plan, which described "develop a weekly schedule and role assignment chart for the radiology department" for introducing team approach, and establish this structure for weekly clinical case conferences, department and unit meetings, and conferences. The plan notes, "then, this structure for weekly clinical case will be in place, and conferences, departmental and inter-unit meetings will be carried out". After returning to Mongolia, the team approach was implemented in the radiology department of MNUMS General Hospital to share information among staff members and create an environment of mutual understanding among them, which is necessary for the introduction of team approach. Based on the results of the pilot implementation at MNUMS general hospital, the internal medicine service at MJH was started at MJH in October 2019.

3） Activity 2-1-5: To phase the team-approached patient management to all clinical departments after the opening of MJH on the basis of the results of the trial introduction.

As described in "Activity 2-1-4", instead of the guidelines for team approach, Japanese experts promoted interventions that focus on fostering a culture and environment in which healthcare professionals of multiple professions (physicians, nurses, BMEs, pharmacists, etc.) could work as one team to treat patients, while understanding each other's position. The intervention has been promoted. As a result, the concept of team approach is reflected in the regulations and manuals of each department and ward at MJH, and is being put into practice as specific initiatives (morning check-ups, multidisciplinary cooperation meetings, conferences, etc.).

4） Activity 2-2-3:

(Version 1) To phase the standardization of medical services using clinical pathways to all medical departments after the opening of MJH, on the basis of the results of the trial introduction.

(Version 2) To develop model clinical pathways appropriate for MJH on the basis of the results of the trial introduction and to apply them to prioritized departments.

In the first-year trainings in Japan (1st, 2nd, and 3rd) and on-site training, the purpose and effects of the introduction of clinical pathways, types of pathways, operational flow, and efforts to promote clinical pathways were explained, and clinical pathways at Japanese university hospitals were provided as reference materials. As a result, an action plan for the introduction of clinical pathways was formulated by the Mongolian side, and two clinical pathways for diabetes and cardiac disease, which are common in Mongolia, were subsequently created under the initiative of the nursing department. However, the clinical pathways that were developed were inadequate in terms of standardizing medical care. The clinical pathway is not a guideline for medical care, but rather a flow chart for curing a patient who has been treated and diagnosed, until treatment is completed, and the patient is cured. This requires that physicians, nurses, and administrative personnel work together on the patient. In addition, the ultimate goal of the clinical pathway is to "improve the quality of medical care," which contributes to economic aspects, medical safety, and patient satisfaction.

On 17 May 2022, a clinical pathway development workshop was held, bringing together all relevant personnel, including the deputy directors (in charge of clinics, administration and finance, and quality and safety), deputy director of nursing, surgical ward chiefs and physicians, and representatives from the surgical department, pharmacy department, and patient support center. Concretely, (1) the purpose of the clinical pathway, (2) the role of the clinical pathway committee and the WG for its creation, (3) how to create a list of diseases from statistics and select diseases to be included, (4) explanation of the format of the clinical pathway and procedures for its creation (for doctors, nursing and patients), and (5) points to keep in mind when creating the clinical pathway (clinical pathways are not applicable to all patients, so it is necessary to apply them in terms of the applicable criteria and exclusions, and the need to obtain the opinions of other medical service departments) were explained.

In response, a clinical pathway development committee headed by the deputy director in charge of medical services of MJH was established, and three WGs on gynecology, otorhinolaryngology, and general surgery were set up under the committee. The comprehensive surgery WG prepared and submitted a clinical pathway for laparoscopic cholecystectomy, but the pathway was not separated for physicians, nurses, and patients. The revisions were made and submitted to the Project on 4 August 2022, and the model clinical pathways were started to be utilized in September 2022.

On the other hand, one of the issues is that Mongolia has never had a clinical pathway in operation, and as was the case 20 years ago in Japan (when the clinical pathway was introduced), there is strong opposition from physicians. The physicians claim that their own practice is superior, and standardization

is unnecessary. Japanese expert advised that it is necessary to take time to promote understanding of this point through implementation of the system, in addition, a workshop was held with related parties.

5）	2-3-3: To perform regular monitoring activities at the initiative of the risk management committee after the opening of MTH.

Regarding the prevention of medical accidents, technology transfer was conducted through training in Japan (1st, 2nd, 7th, and 8th) and on-site training conducted in the first year. Concretely, Japanese experts assisted in the developing of operational rules and related regulations for organizations related to the risk management department, quality control department, and infection control management department, which are necessary to prevent medical accidents, and also provided training related to safety management, risk management, infection control, disaster management, and so on. When Japanese experts traveled to Mongolia, monitoring and follow-up on the content of their training in Japan were conducted in the form of on-site training.

As a result, a risk management committee was established at MJH to evaluate and resolve incidents and other risks that occur in the hospital, and to consider preventive measures. In addition, the importance of risk management in the hospital was recognized, and Mongolia's first deputy director for quality and safety management was appointed. When major water leakage accidents occurred in September, October, and November 2019, the risk management committee took the lead in confirming the accident situation in cooperation with the facilities management department, analyzed the risks and discussed preventive measures, and made a report of the accidents. Although similar accidents occurred thereafter, no similar accidents have occurred since the winter of 2020.

Regarding medical incidents in the treatment and care of patients, as described in "Activity 2-1-1," there is a tendency in Mongolia not to reveal the fact that an incident has occurred due to concerns about loss of trust and damage to reputation, and verification of incidents has a strong tendency to search for criminal person due to the influence of the former socialist era. Therefore, the Project introduced and implemented the Hiyari-Hatto Incident Reporting Form with the aim of raising awareness about the significance of incident investigation and the importance of the risk management committee in order to prevent similar accidents from occurring. As a result of repeated guidance, appropriate reporting has become common practice. In the future, the hospital will become even safer by promoting uniformity in the level and quality of reports made by each department, and classification of accumulated data and countermeasures.

6）	2-4-4: To perform regular monitoring on the compliance with the guidelines and/or regulations at the initiative of the committee.

Since the start of outpatient services in October 2019, weekly ICT rounds have been conducted by the nosocomial infection control team. The rounds are conducted in accordance with nosocomial infection control guidelines and check the situation of infection control measures in consultation rooms

and laboratories, hand disinfection of doctors and nurses, and handling of medical waste, etc., and the nosocomial infection control team provides guidance if there are any deficiencies or errors in practice. The results of the rounds are shared and reported at in-hospital meetings, and the infection control management department conducts in-hospital training to ensure that hospital staffs have a sound knowledge and awareness of nosocomial infection control measures. The Project held regular expert subcommittee meetings with MJH's infection control management department and ICT, led by experts in nosocomial infection control, to review the status of training and ICT rounds, and to share and provide advice on issues related to nosocomial infection control.

The surgical service required a strengthened a central sterile and supply department and proper sterilization procedures due to the importance of preventing nosocomial infections. During the travel restriction due to COVID-19, in addition to online meetings of the technical subcommittee, the situation of the sterilization department and the sterilization workflow were monitored using an online system and video, and guidance related to sterilization work was provided. For example, during the online monitoring conducted in October 2020, Japanese experts identified that clean and unclean areas were not clearly demarcated, and that the method of transporting surgical instruments was risky, and provided the necessary advice. With the expansion of surgical services, specific advice was given on more appropriate sterilization operations, strengthening cooperation among departments regarding nosocomial infections, etc. With the restart of travel to Mongolia, direct monitoring and guidance to the sterilization department were carried out, as a result, appropriate sterilization operations are now in place.

Regarding COVID-19, MJH was designated as a hospital to receive COVID-19 infected patients. Therefore, in order to strengthen nosocomial infection control measures, Japanese experts held online meetings with the infection control management department to confirm the situation of COVID-19 infected patients in Mongolia and the measures to be taken at MJH, and provided advice. In November 2020, a seminar on COVID-19 nosocomial infection control was held for about 40 MJH staffs (all department heads, directors, nurse managers, and infection control managers). The seminar provided instruction on the characteristics of COVID-19 and how to deal with it in medical institutions, based on Japan's experience. In response to the above, the infection control management department has prepared an infection control manual for use in the case of a pandemic.

On June 28, 2022, a workshop on "nosocomial infection risk, prevention, control and management" co-sponsored by the infection control department of MJH, MNUMS and the National Center for Infectious Diseases was held at the auditorium of the faculty of medicine. The purpose was to widely disseminate the establishment of the international standard for infection control and management to medical personnel in Mongolia. Participants included representatives from each hospital in Ulaanbaatar, representatives from each province (participating online), MNUMS and MJH staff members involved in infection control. The Mongolian side gave a presentation focusing on the technology transferred from the Project. In addition, the Japanese experts gave presentations on "Infection Control and Management: Legal Issues" and "Antibiotic Use and Drug-Resistant Microbial Infection," which will be important for infection control in the future. After the presentations, a round-table session was held

for the participants to experience the first ICT round in Mongolia, which is being conducted at MJH. It is the future mission of the national university hospital to disseminate and promote the infection control system established at MJH as the Mongolian standard in the country.

(4) Activities related to Output 3

1）	Activity 3-2: To conduct Training in Japan for eligible medical staff in accordance with the plan.

As part of technology transfer for the introduction of advanced medical services, the radiology department conducted additional application training for CT and MRI on a subcontracted basis. Although application training was once provided by the manufacturer at the time of delivery, the training was limited to basic operations and general imaging methods, and the technicians were not able to acquire sufficient skills. For additional training, the Project dispatched Japanese experts at its own expense to provide advice and guidance as needed. Tables 14 and 15 show a summary of each training program.

Table 14 Outline of Additional Application Training related to CT (Local Subcontract)

Period	30 September 2019 (Mon) ~ 4 October 2019 (Fri) (5days)
Instructor	Mr. Pelesikoti Kolopeaua (CANON)
Trainee	Dr. Norovbanzad. D (Radiology, physician) Mr. Ankhbold. U (Radiology, engineer) Mr. Mungun. B (Radiology, engineer) Mr. Temuujin. B (Radiology, engineer) Ms. Byambadalai. G (Radiology, engineer)
Content	Day 1：How to use the detector, Bulb rotation time, Protocol changes, etc. Day 2：Four-phase CT imaging of the abdomen (plain, arterial phase, portal vein phase, equilibrium phase), Use of injector, etc. Day 3：Analysis of displacement, Angiography, Far measurement, Contrast Day 4：Practical exercise, Q&A Day 5：Practical exercise, Q&A

Source：Project Team

Table 15 Outline of Additional Application Training related to MRI (Local Subcontract) MRI

Period	28 October 2019 (Mon) ~ 1 November 2019 (Fri)	
Instructors	Mr. Garrett Hablitz (CANON)	
Trainee	Dr. Munkhbaatar. D (Dept. of Radiology, Radiologist) Dr. Tuvshinjargal. D (Dept. of Radiology, Radiologist) Dr. Delgerdalai. Kh (Dept. of Radiology, Radiologist) Dr. Erdenebal. T (Dept. of Radiology, Radiologist)	Ms. Khishigee. P (Dept. of Radiology, Radiology Technician) Mr. Mungun. B (Dept. of Radiology, Radiology Technician) Mr. Temuujin. B (Dept. of Radiology, Radiology Technician) Ms. Byambadalai. G (Dept. of Radiology, Radiology Technician)
Topics	DAY1: Parameter Setting, Description of MRI Contras, knee MRI, Lumbar MRI, etc. DAY2: Breast MR, MRCP, Hand MR, etc. DAY3: Abdominal MR including Respiratory Gated Radiotherapy, MR on bilateral hands with	

	MR coil, Abdominal ~ Lower limb MRA with Cardiac Trigger Monitor, etc. DAY4: Ankle joint and foot MRI, Cardiac MR, etc. DAY5: Practical Training, Q&A

Source：Project Team

As for the angiography apparatus (angiography), after the water leakage accident that occurred in 2019, the apparatus was returned to original condition, but for application training, it remained difficult to dispatch instructors (engineers) due to COVID-19. Following the travel easing, a total of three groups of engineers (equipment adjustment, equipment operation, and application/clinical witnessing) were dispatched sequentially from 25 April 2022, and training sessions were held. Despite an incident involving the COVID-19 among the engineers in the first group, the training was successfully completed on 23 June 2022. The training was requested not only from MJH staffs, but also from National Hospital No. 1 and National Hospital No. 2. This was done in order to obtain support from both hospitals, as they have expertise and experience in catheter intervention using angiography, until such time as MJH can intervene on its own (a contract has already been signed with MJH).

Table 16 Outline of Additional Application Training related to Angiography (Local Subcontract)

Period	28 April 2022 (Thu) ~ 24 June 2022 (Fri)	
Instructors	Mr. Tamari Yusuke Mr. Yamamoto Toshiyuki Ms. Kono Chihiro Ms. Shoji Yumiko (Shimadzu)	
Trainee	JAPAN MONGOLIA TEACHING HOSPITAL: Neurosurgeon, Cardiologist, Radiologist, Radiology Technician	First National Hospital of Mongolia: Cardiologist, Radiology Technician Second National Hospital of Mongolia: Cardiologist, Radiology Technician
Objective	・Application Guidance ・Clinical attendance for various cases (Image Confirmation, Various settings, etc.)	
Topics	・Confirmation of equipment operation, Various Initial Configuration ・Equipment Operating Procedure ・Clinical attendance for various cases (heart, cerebral blood vessel, abdomen etc.), configuration change ・3D imaging Condition, 3D workstation operation	

Source：Project Team

In the "clinical central laboratory section," practical tests (sepsis, acute myelogenous leukemia, myelofibrosis, acute lymphocytic leukemia, etc.) were given to laboratory technicians through on-site training, and a certain level of identification ability was confirmed. In addition, instruction was provided on how to differentiate these cells using optical microscopy. As for the laboratory testing equipment provided by the grant aid project, advice was given on the development of the testing system at MJH, including collaboration with other hospitals, as there are limits to the number of test items that can be measured.

Although COVID-19 made it difficult to confirm and provide guidance locally from 2020, Japanese experts visited Mongolia in July 2022 to identify the situation of achievement and issues, and to provide follow-up guidance. The results are as follows.

[Blood and urine collection]

- Blood collection 120-150 patients/day, urine collection 60-70 patients/day, barcode readers are used, no problems with procedures, etc.

[Laboratory testing equipment]

- Generally, properly maintained.

[Variety of test]

- It is being done appropriately and there are no particular problems. However, there is a problem that there are few people who can look at microscopes. Since it is difficult to allocate people to the microscope inspection from the current number of staff, a small number of people are available for microscopic inspections.

[Risk management]

- Appropriate response methods for urgent abnormal values are also defined.

[Educational programs]

- After new employees are hired, they rotate through all departments over a six-month period for training as part of their new employee training.。

As for the "radiology department", Japanese experts have also transferred technology related to proper operation and equipment management through training in Japan and on-site guidance. In July 2022, when travel restrictions were eased due to COVID-19, Japanese experts visited Mongolia and provided the following confirmation and guidance.

[Status of operation]

- The department performs 40-60 x-rays per day, 15-25 CT scans per day, 8-10 MRI scans per day, about 40 ultrasound examinations per day, and 110-120 interpretations per day, which means that the current workforce of 12 radiologists and 7 technicians is operating at maximum capacity (the radiology department is in three shifts to provide 24-hour services).

[Issues]

- Some equipment is not in operation due to malfunctions. This is due to the inability of engineers to visit Mongolia due to COVID-19 and the difficulty in obtaining repair parts due to the lockdown in China.
- With the current number of staff, it is difficult to operate any longer; therefore, an increase in staff is desired. For example, mammography examinations are highly profitable, but the number of mammography examinations is limited to about 2 per day.

As described in Activity 1-2-4, Japanese experts in the biomedical engineering department, as in other departments, have been transferring technology through training in Japan and on-site guidance. Results of the visit. It was found that there were issues with the number and capacity of staff. The regulation requires 14 staff members; however, as of September 2022, there were 11 staff members (3 vacancies). Regarding the 11 staff members, it was also found that only 2 staff members remained who had previously technical transferred, and all others left from MJH. Therefore, technical guidance was again

provided to strengthen the organizational structure of the medical equipment department in Japanese-style hospital management and to enhance its capacity for equipment maintenance and management operations.

As for maintenance and management issues, (1) although the built-in batteries (lithium batteries) of the equipment provided by the grant aid project are due for replacement (3-4 years), it is difficult to implement due to the cost and transportation of batteries from Japan (problems with air transportation or import suspension due to the border lockdown with China), (2) Oxygen generator was installed at the hospital site with the support of the World Bank under expansion of COVID-19, but there are no explosion-proof walls and the electrical system is not designed to be explosion-proof, so measures must be taken in case of an emergency. These were explained to hospital executives in addition to the medical engineering department.

When considering the future provision of advanced medical services at MJH, it is desirable to further improve the level of radiology technicians, laboratory technicians, and biomedical engineers who work in the backyard of the hospital. For this purpose, a two-to-three-week training program in Japan would be useful. In the distant future, it is hoped that the knowledge and skills gained from MJH will be disseminated throughout Mongolia to establish standardized diagnostic imaging and testing methods, including Diagnostic Reference Levels (DRLs), and the role of medical engineer as a member of team approach.

2）	Activity 3-3: To conduct training debriefings, intra-/inter-department study meetings, etc. for promoting technology sharing.

In order to share the knowledge and skills acquired through the training, the participants of the training in Japan prepared and submitted reports, and debriefing sessions in MJH held after their return to Mongolia based on the reports. In the 10th training course in Japan (team approach: surgery department), biomedical engineers who attended the training course in Japan on the maintenance and management of blood gas analyzers by the manufacturer (Siemens Healthcare Diagnostics Inc.) recorded video clips and gave lectures to users (doctors, nurses, technicians) and maintenance personnel in MJH after their return. Additional application trainings related to CT and MRI were also being provided, mainly by those who received training, and technology was transferred to those who have not yet received training to strengthen examination capabilities.

In the radiology department, trainees take the lead in sharing information with engineers in Mongolia at radiology conferences and other opportunities. Similar activities are also taking place in the nosocomial infection control section, where trainees serve as members of a nosocomial infection control committee organized by the MOH to share information on Japanese-style nosocomial infection control. In addition, as described in "Activity 2-4-4", nosocomial infection control measures related to COVID-19 were shared at training sessions for Mongolian personnel.

(5) Activities related to Output 4

1） Activity 4-1: To conduct trainings of operational management, which include staffing and financial management geared to staff members engaged in EMS.

Regarding the implementation structures and systems of Japan's emergency medical care, through the training in Japan conducted in the first year (1st: Overview of the Japanese Hospital System, 3rd: Nursing Management, 7th: Hospital Administration), skills were transferred to related medical personnel and administrative staffs. Concretely, the program provided instruction on emergency patient management, including triage and efficient patient flow, care after transfer to ICU and general wards, and operation and management of the emergency medicine department, such as staffing and financial management.

On the other hand, few of the trainees who participated in the training in Japan remained in the emergency medicine department of MJH, and there were issues with the retention of the knowledge taught. Therefore, the Project planned and implemented a training in Japan on team approach for the opening of operation theaters and wards. And one nurse manager of emergency medicine department and, and one ICU nurse manager participated in the 11th training in Japan (Team approach: Patient Support Center/ICU). Japanese experts gave lectures on information sharing and inter-departmental cooperation related to the transfer of emergency patients from the emergency medicine department to the ICU and nursing care, and promoted understanding through actual site visits.

Table 17 Outline of the 11th Training in Japan (ICU)

Name	Team Approach (Patient Support Center / ICU)
Period	25th November 2019 (Mon) ~ 29th November 2019 (Fri) (5days)
Trainee (ICU)	Sukhbat Soyol-Erdene (Emergency Room: Head Nurse) Dorligbaatar Sarantuya (ICU: Head Nurse)
Objective	To understand the workflow of a series of job in ICU, and to learn the appropriate operation and hospital management system
Topics	① A Series of operations in ICU - Patient acceptance, Workflow for patient management - Triage, Nursing care - Sharing information among the head of each department, Multidisciplinary Cooperation - Human Resource Development System ② On-site inspection (ICU) - Environmental coordination in each unit (Patient waiting room, Family and attendant visitation room) - Preparation for patient acceptance (medical equipment, medical device, Nursing care supplies, etc.) - 6S, Sanitation and Infection Control Precautions

Source：Project Team

EMS began in November 2020, along with the surgical ward and operation theater. It should be noted that the start of EMS is a prerequisite for ensuring that services in the surgical ward, ICU, and operation theater were in place. For this reason, Japanese experts focused on establishing a medical service system in the hospital. Concretely, the Project team made a list of preparatory tasks/requirements necessary for

these medical services to be launched at MJH, and then reviewed the progress in weekly meetings between Japanese experts and MJH executives to support the launch of the EMS.

Services in the surgery wards, the surgery department and the emergency medicine department began in November 2020. Until the system is fully operational, the hospital has been providing services such as appendectomy, dyspnea, etc. to emergency patients in the 5 Khoroos under the jurisdiction of Bayanzurkh District, where MJH is located. However, with the spread of COVID-19, the MOH Ministerial Decree designated MJH as a hospital to receive positive patients and the emergency medicine department to function as an ICU for severe case patients. In March 2022, the hospital ceased receiving COVID-19-positive patients, and normal EMS are providing, which continue to this day.

As of September 2022, the emergency medicine department has 14 beds, with 6 physicians (7 fixed number) and 15 nurses (18 fixed number) on duty. The entire staffs are rotated in 4 shifts (24 hours work and 72 hours vacation). In April 2002, the coverage area was no longer limited, and the hospital began accepting patients from outside the five Khoroos. However, the hospital itself has only a few beds, and there are few specialist physicians and nurses, so the system is currently not fully established for this purpose. Currently, trauma, pediatric, internal medicine, and neurology patients are the most common. The number of patients received per day is around 15.

Following the restart of EMS, discussions were held with the EMS department to confirm what needs to be done to develop the services in the future. As a result, it was decided to begin offering seminars via online on four topics: pediatric emergencies, poisonings, trauma, and emergency echo. Each seminar was to be an hour long, and six seminars were conducted (in terms of content: 4 themes and 15 topics). The online seminars were conducted in September 2022. The lecturers were professors from various departments of the Tokushima University, and the modules actually used in university classes were adapted to the actual situation at MJH. The content of the seminar was edited with videos and other materials so that MJH can utilize them in future in-hospital training and pre- and post-graduate training programs.

2)	Activity 4-3: To incorporate findings and experiences of the EMS in MJH on the lectures in MNUMS.

The grant aid project has provided MJH with facilities and equipment to provide EMS. Until now, the original EMS in Mongolia had not been established, and in other hospitals, EMS were provided by a surgical department, and most of the patients received were those with minor illnesses (the hospital ended up playing a role similar to that of a 24-hour outpatient clinic). In this circumstance, from the perspective of establishing a model for EMS, Japanese experts have provided guidance on emergency patient management, patient receiving, triage and securing patient flow, as well as on emergency medicine department operations and management, as described above.

MJH and the faculty of medicine (emergency, ICU, anesthesia research department) also recognized that the facilities and equipment at MJH are fully prepared to provide EMS in accordance with

Japanese/international standards, which had not been available in Mongolian hospitals until now. If MNUMS is able to take charge of clinical training at MJH, it will be possible to provide education related to international standard emergency medical care. Since there has been limited cooperation and communication between the emergency, ICU, and anesthesia research department of the faculty of medicine of MNUMS and the emergency medicine department of MJH, therefore, Japanese experts proposed the establishment of a WG that both parties can exchange information on a regular basis. In response, the Mongolian side invited staff members (e.g., director) of the emergency medicine department of MJH as a specially appointed professor of the emergency, ICU, and anesthesia research department of the faculty of medicine, and a system was established for constant exchange of opinions between the two sides. As a result, the approach to emergency medicine is unified and regular meetings are held.

As for the curriculum, although there are three existing curricula, "for 3rd year pre-graduates," "for 4th year pre-graduates," and "for post-graduate specialized training," the content is not up to international standards, and the work to revise it for the new academic year in September 2023 is now underway. Existing curricula have been shared with Japanese experts, who have compared them with curricula used in Japan and advised on items that are needed (e.g., pediatric first aid as mentioned above). In addition, as an activity outside of the Project (within the framework of the inter-university agreement between MNUMS and Tokushima University and Ehime University, advice will be given on the curriculum to be revised by April 2023, as appropriate), advice will be provided on the curriculum to be revised by April 2023, as required. As MJH and MNUMS Faculty of Medicine, the goal is ultimately to provide "emergency life-saving services".

3） Activity 4-4: To widely share the findings and experiences of EMS in MJH with medical professionals in Mongolia through the implementation of conferences, etc.

Taking advantage of the teaching materials to be constructed by the online seminar shown in "Activity 4-3," and the need to disseminate and share information to other medical institutions in Mongolia as the country's first model of international standard EMS, preparations were first made to hold in-hospital seminars to enhance understanding of the concept within MJH. For this purpose, a mechanism was established to hold in-house seminars on a regular basis.

The first in-hospital seminar was held on 22 September 2022 on the topics of patient support centers, infection control, and safety management. The in-hospital seminar will be held on an ongoing basis, and emergency medicine will be the theme of the second and subsequent in-hospital seminars, and the results of the same will be used to disseminate and share information to other medical institutions in Mongolia. The same information dissemination to medical institutions in Mongolia has already been implemented by MJH itself in the areas of infection control and nursing management, and will take the same approach for emergency medicine.

(6) Activities throughout the entire contract period

1） Hold meetings for information sharing (including the Joint Coordination Committee meetings)

On 4 June 2020, the 4th JCC was held via the online system in view of the situation where travel to Mongolia was not possible due to the spread of COVID-19 infection. MECSS (currently MEDS), MOH, Ministry of Finance, Ministry of Foreign Affairs, MNUMS, and MJH participated from the Mongolian side, and Embassy of Japan in Mongolia, JICA Headquarters, JICA Mongolia Office, and the Project team members participated from the Japanese side.

Following the transfer of jurisdiction of the MJH from the MOH to the MEDS, the JCC reconfirmed its role, purpose of the Project, and the concept of the university hospital, and discussed the progress of activities, implementation issues, and future activities at JCC. In view of the challenges in the Project implementation, it was confirmed that the JCC would focus on the following issues in particular.

- Establishment of the management system led by the hospital director
- Strengthening the system of collaboration among the Project stakeholders
- Strengthening of the functions of each committee of MJH
- Appropriate operational management of hospital finances
- Procurement of equipment and materials, human resource development, and budgetary measures for expansion of medical services
- Response to the receiving COVID-19 positive patients

On 1 October 2021, the 5th JCC was held in a hybrid method (the Project team members on dispatch in the field participated in Mongolia, while the Project team members in Japan participated online). The participants were MEDS, MOH, Ministry of Finance, Ministry of Foreign Affairs, MNUMS, and MJH from the Mongolian side, and Embassy of Japan in Mongolia, JICA Headquarters, JICA Mongolia Office, and the Project team members from the Japanese side. The following items were discussed, and the Project period was extended and the PDM was revised based on the results of the discussions.

- Report on MJH's initiatives and the Project activities
  - New structure under MNUMS
  - Development of a system to receive COVID-19 positive patients
  - Status of services provided
  - Future challenges for hospital management
- Future activity plans for the Project
  - Extension of the Project implementation period
  - Revision of indicators for achievement (PDM revision)
  - Activity Plan

On 14 September 2022, the 6th JCC (the final JCC of the Project) by Hybrids, was held. The participants were MEDS, MOH, MNUMS, and MJH from the Mongolian side, and JICA Headquarters, JICA Mongolia Office, and the Project team members from the Japanese side. The agenda for discussion

was as follows. The objective of the meeting was to report on the results of the Project activities, the status of achievement of the Project purposes and outputs set in the PDM, and the results of the evaluation based on the Development Assistance Committee (DAC) evaluation criteria. As a result of the discussion, the participants unanimously agreed that the Project purpose and outputs were achieved and that the Project was rated highly in the six DAC evaluation criteria.

- Activities by MJH
  - History of MJH
  - Service Delivery Status
  - Input by Mongolian side
- Report on completion of the Project activities
  - Activity results and inputs to the Project
  - Achievement of the Project purpose and outputs
  - Evaluation results based on DAC evaluation criteria

2.2 Achievements of the Project

2.2.1 Outputs and Indicators

Table 18 shows each output, indicators for measuring achievement, and the status of achievement.

Table 18 Achievement of Outputs

Objectively Verifiable Indicators	Status of Achievement
Output 1: Appropriate management is implemented in MJH.	
Indicator 1-1. An executive committee is formed at MJH, and the committee activities are conducted in accordance with the committee regulations at the time of the termination of the Project.	**[Achieved]** The executive committee, consisting of hospital executives, holds a meeting once a month in accordance with the regulations. The director's committee (director, deputy-director, and human resources manager), a higher-level body, holds a meeting once every quarter. The director's committee decides on major hospital management strategies and policies. Specific action plans in accordance with the same decisions are decided by the executive committee. Therefore, it is judged that the said indicator has been achieved.
Indicator 1-2. MJH is able to proceed hospital management (financial management, physical distribution management, and information management) based on its management policy at the time of the termination of the Project.	**[Achieved]** An executive committee consisting of the responsible persons of each department meets every Monday). In accordance with the plan decided by the executive committee, discussions are held, and each department conducts specific activities based on the results of the meeting. Therefore, the indicator is judged to have been achieved.
Output 2: Patients-centered medical services are provided in MJH.	
Indicator 2-1. Model clinical pathways are developed based on the actual medical performance of prioritized departments and are implemented by multi-professional team at the time of the termination of the Project.	**[Achieved]** A clinical pathway committee and WGs for the development of the clinical pathway were organized, and the diseases to be covered were selected. A draft clinical pathway for laparoscopic cholecystectomy was developed, and the model clinical pathway was finalized based on the advice of the Project team, and the model clinical pathway was operational

Objectively Verifiable Indicators	Status of Achievement
	from mid-September 2022. Therefore, the indicator is judged to have been achieved.
Indicator 2-2. Regulations and guidelines for the prevention of medical accidents and for the prevention and control of nosocomial infections are followed in all departments in MJH at the time of the termination of the Project.	**[Achieved]** A system for the prevention of medical accidents has been established through the introduction and operation of the Hiyari-Hatto Incident Form. In addition, the infection control department conducts weekly ICT rounds in accordance with the regulations, and a system for nosocomial infection control has been established. Therefore, the indicator is judged to have been achieved.
Output 3: Advanced medical services are provided in MJH.	
Indicator 3-1. At least in 3 areas (CT, MRI, endoscopy, etc.), new diagnostics and treatment techniques which are acquired through training courses in Japan and Mongolia are introduced at the time of the termination of the Project.	**[Achieved]** Diagnoses are made by CT, MRI, endoscopy, mammography, and ultrasound, and treatment based on the results of these diagnoses is performed (Endovascular procedure using angiography apparatus (cardiovascular, cerebrovascular), pancreatoduodenectomy, knee and articulatio coxae endoscopic surgery, skin transplantation, colorectal cancer, total gastrectomy, etc.). Therefore, the indicator is judged to have been achieved.
Indicator 3-2. At least three in-hospital workshops are held in MJH during the final year of the Project.	**[Achieved]** In-house training by the radiology department on radiation equipment, training to staff on Japanese-style infection prevention under COVID-19 pandemic, workshops by the nursing department on patient management using Japanese-style management, and workshops by the infection control department on infection control have been held. Therefore, the indicator is judged to have been achieved.
Output 4: Advanced emergency medical services (EMS) are provided in MJH.	
Indicator 4-1. The system to provide major medical services for 24 hours is established at the time of the termination of the Project.	**[Achieved]** After being de-designated as a COVID-19 positive patient receiving hospital by the MOH, MJH began receiving emergency patients. The staffs are divided into 4 teams to provide 24-hour EMS. Therefore, the indicator has been achieved.
Indicator 4-2. Findings and experiences of the EMS in MJH are incorporated into the curriculum in MNUMS at the time of the termination of the Project.	**[Unachieved]** Due to the influence of the outbreak of the COVID-19, full-scale EMS did not start until March 2022. Therefore, the remaining period of the Project has been focused on establishing a system and promoting preparatory activities for the curriculum revision. As a result, a structure has been established to ensure that the MJH experience is reflected in the curriculum (a staff member from the emergency medicine department of MJH has been appointed as a special professor in the emergency, ICU, and anesthesia research department of the Faculty of Medicine, regular exchanges of opinions are taking place). A review process of the existing curriculum has also begun and will be completed by April 2023.

Source: Project Team

2.2.2 Project Purpose and Indicators

The project purpose, indicators for measuring purpose achievement, and achievement status are

shown in Table 19.

Table 19 Achievement of the Project Purpose

Objectively Verifiable Indicators	Status of Achievement
Project Purpose: A comprehensive system is established in MJH for the provision of advanced and quality medical services.	
Indicator 1. The bed occupancy rate is kept more than 80% during the final year of the Project.	**[Achieved]** According to data from the general administration department (average occupancy at 8:00 a.m. each morning), the bed occupancy rate as of August 2022 is 85%, which exceeds the target, and the indicator was achieved.
Indicator 2. Patient satisfaction for medical services is over 80% at the time of the termination of the Project.	**[Achieved]** Using the form approved by the Minister of Health Decree A/578. The results of the patient satisfaction survey showed that the satisfaction rate for the first half of 2022 was 89.6%, exceeding the target (1,897 patients), therefore, the indicator was achieved.
Other	**[Achieved]** In recognition of its hospital management capabilities and medical service delivery system, MJH received ISO certification in July 2022 (only a few hospitals in Mongolia have yet to receive this certification). This shows that the medical service system is well established.

Source: Project Team

2.2.3 Comprehensive Evaluation

With the exception of "Indicator 4-1 MJH experience will be integrated into the MNUMS curriculum" under "Output 4 Emergency Medical Services," it can be concluded that both the Project purpose and outputs were achieved. As for EMS, this is due to the influence of MJH being designated as a COVID-19 positive patient receiving hospital and the emergency medical department triaging new COVID-19 positive patients and receiving severe case patients, and the full EMS started in March 2022. However, since a system between MNUMS and MJH was established for curriculum development and the revision process has started for the new semester of MNUMS in 2023, it is expected that the curriculum will be developed around April 2023, reflecting the experience of MNUMS.

3. History of PDM Modification

The COVID-19 outbreak at the end of 2019 made it difficult for Japanese experts to travel to Mongolia and receive trainees from Mongolia. Therefore, discussions were held using an online system, monitoring was conducted, and technology transfer was implemented, however, it was not possible to actually provide guidance at the site. The restart of the trip was scheduled for March 2021, more than a year after the absence of the Japanese experts, and it became necessary to review the activities and evaluation indicators, including the extension of the Project period, as well as to set indicators. The revisions were discussed at the 5th JCC meeting in October 2021 and unanimously approved. The revisions are shown below.

Table 20 Comparison Table of PDM Revision

Items	Indicators	Version 1	Version 2
Project period	—	February 2017 - January 2022	February 2017 - October 2022
Project purpose	1	The bed occupancy rate is kept more than 90% during the final year of the Project.	The bed occupancy rate is kept more than 80% during the final year of the Project.
	2	Patient satisfaction for medical services is over XX % on average.	Patient satisfaction for medical services is over 80% at the time of the termination of the Project.
Output 1	1-1	All departments in the organogram of MJH are fully operated at the time of the termination of the Project.	An executive committee is formed at MJH, and the committee activities are conducted in accordance with the committee regulations at the time of the termination of the Project.
	1-2	The management of MJH is kept in good shape on a stand-alone basis at the time of the termination of the Project.	MJH is able to proceed hospital management (financial management, physical distribution management, and information management) based on its management policy at the time of the termination of the Project.
Activities	2-1-2	To develop operational guidelines and introduction plan for team-approached patient management as well as capacity development plans geared to co-medical staff, on the basis of the knowledge and experiences acquired through the Training in Japan.	To develop practical tools and communication system for team-approached patient management on the basis of the knowledge and experiences acquired through the Training in Japan.
	2-1-4	To introduce the team-approached patient management to several pilot departments in accordance with the guidelines on a trial basis at the MNUMS General Hospital.	To introduce the team-approached patient management to several pilot departments by utilizing the practical tools and the communication system on a trial basis at the MNUMS General Hospital.
	2-2-3	To phase the standardization of medical services using clinical pathways to all medical departments after the opening of MJH, on the basis of the results of the trial introduction.	To develop model clinical pathways appropriate for MJH on the basis of the results of the trial introduction and to apply them to prioritized departments.

Source: Project Team

4. Others

4.1 Results of Environmental and Social Considerations

There are no particular items to be considered for the Project. However, with regard to medical waste, the MJH separates the waste according to in-house standards, and then requests a specialized medical waste disposal company to dispose of the waste.

4.2 Results of Considerations on Gender/Peace building/Poverty Reduction, Disability, Diseases Infection, Social System, Human wellbeing, Huma Right and Gender Equality

The Project aims to establish a management system for the hospital and a system for providing medical services. In particular, the following support was provided with regard to patient management for women, the establishment of an operational structure for nurses (most of whom are women), and gender considerations for patients.

- The gender ratio of the MJH staff is approximately 2 to 8, with a high percentage of women. Therefore, support for correcting the male/female ratio and equalizing statements at executive meetings, etc.
- Guidance on health checkup items that take gender-specific diseases (breast cancer, prostate cancer, etc.) into consideration when conducting health checkups.
- Assignment of female technicians for mammography.
- Gender-sensitive admission planning and assistance to patients in patient support center.
- Establishment of hospitalization system according to the number of male and female inpatients by introducing the open management system for hospital beds.

In addition, as a consideration for poverty reduction, the patient support center assists hospitalized patients in applying for free medical care according to their financial situation.

5. Results of Joint Review

5.1 Result of Review based on DAC Evaluation Criteria

This study uses the six criteria of the DAC evaluation, which is the international ODA evaluation framework of the Organisation for Economic Cooperation and Development (OECD), are listed below[12]. The five-point scale of “high”, “relatively high”, “medium”, “relatively low” and “low” was used for ratings.

DAC Evaluation Criteria

The six DAC Evaluation Criteria are as follows.

【Relevance】

- Relevance of the implementation of the assistance (development plans of the country concerned, development needs, needs of the society, beneficiary groups in the target area).
- Whether the project has been formed with a focus on “beneficiaries” with consideration of vulnerable groups and equity. Whether appropriate adjustments have been made to ensure continued relevance throughout the project implementation period, despite any changes in the situation.
- Adequacy of logic of the project plan and the approach.

【Coherence】

- Alignment with the development cooperation policies of the Government of Japan and JICA.
- Specific synergies and interlinkages with other JICA projects (technical cooperation, loan assistance/grant aid, etc.)
- Whether the project is appropriately complemented, harmonized and coordinated with other Japanese projects and assistance provided by other donor agencies, whether it is aligned with international frameworks (international targets and initiatives such as the SDGs) and international norms and standards, and whether specific measures and expected results are demonstrated.

【Effectiveness】

- The degree of achievement of the expected project effects at the target level in the target year (including the utilization of facilities and equipment), and whether there are differences in achievement and results between beneficiaries at the time of the project.

【Impact】

- Status of realization of positive and negative indirect and long-term effects (social systems and norms, people’s well-being, human rights, gender equality, environmental and social aspects).

【Efficiency】

- Comparison of planned and actual project input plans, project duration and project costs.

【Sustainability】

- Prospects for sustainability of the effects generated by the project.

[12] Extracted from “What is JICA’s evaluation system?” https://www.jica.go.jp/activities/evaluation/about.html

- Organizational and systemic aspects (organizational structure/human resources), technical aspects, financial aspects (current status of securing operation and maintenance budgets)

DAC Evaluation Results

(1) Relevance: high

In 2016, the Government of Mongolia developed the "Mongolia Sustainable Development Vision 2030" in response to the SDG framework. In the vision, the reduction of maternal and infant mortality is set as an overall goal. In terms of the strategy for the health sector, it sets the goal of establishing an "effective, quality and accessible health care system", with specific targets to improve access to health services, improve testing and diagnostic capacity, reduce the risk of disease and mortality, and increase life expectancy. In addition, the "Long-Term Vision 2050", approved by the Parliament in December 2020, outlines nine goals, of which "2. Human Development" states the goal to "achieve a healthy Mongolian people".

In addition, as mentioned in the background, the low quality of the medical workforce was a challenge before the Project started. In response to this situation, although the Government of Mongolia had promoted various policies and efforts, including capacity development of health professionals, the educational system, such as the post-graduate training system and training programs, had not been adequately developed. Therefore, the Project aimed to establish MJH as a center for pre- and post-graduate training of health professionals, and at the same time, build a system to provide medical services as a center for providing high-level medical services corresponding to the recently increasing number of NCDs, such as cerebrovascular diseases and cancer. In the future, the Project is expected to contribute to the improvement of the quality of medical services in Mongolia.

At the start of the Project, MNUMS, the managing body of MJH, only had experience in managing a hospital with about 25 beds and no experience in managing a teaching hospital. Therefore, although a university hospital has three missions of "medical services", "education" and "research", the Project first aimed to establish a system to provide a high level of management and high-quality medical services as a general hospital. Before the hospital opened, the Project transferred skills and techniques to Mongolian personnel, mainly through training in Japan. Once the hospital opened, the Project also conducted on-site training programs, and during the outbreak of COVID-19, an on-line system was utilized for transferring skills and techniques. The hospital is operated and managed. Currently, the hospital has a high level of management with approximately 500 outpatients per day and a bed occupancy rate of more than 85%.

For these reasons, it can be said that the Project contributes to improving the health of the Mongolian population as a whole, which is consistent with the needs of the Mongolian side, and that the plan and approach of the Project was relevant.

(2) Coherence: high

The Project has achieved all the target evaluation indicators of the Project coherence as described below and can be rated as highly effective.

According to the "Country Development Cooperation Policy for Mongolia (December 2017)" of the Ministry of Foreign Affairs of Japan, "improvement of basic social services" is listed in the "aim of development cooperation for the country/region concerned". Specifically, the policy states that the country will "support achieving a standard of healthcare compatible with social conditions" in the "Priority Areas (Medium Goals) (3) Achieving an inclusive society". Furthermore, according to the "JICA Country Analysis Paper for Mongolia (September 2017)", JICA aimed to "provide quality medical services that correspond to economic growth and contribute to eliminating regional disparities in access to the same services by strengthening health workforce". In addition to the provision of advanced medical services, the Project aimed to develop health professionals who will contribute to improving the state of health in Mongolia in the future and to strengthen the system for clinical research, which aligns with the assistance policy of the Government of Japan and JICA.

The Project was implemented prior to the grant aid "the Project for Construction of Mongolia-Japan Teaching Hospital (grant aid project)", through which MJH was constructed. The Project is a combination of a grant aid and a technical cooperation project, which means that hardware and software were integrated into one project. During the construction, regular meetings were held with the stakeholders, including the consultants of the grant aid project, to provide advice on the layout of the facilities from the perspective of software. In addition, the Project provided application training for the CT, MRI and angiography equipment/apparatus provided by the grant aid project, in order to ensure more effective use of the equipment/apparatus for diagnosis.

Furthermore, JICA has implemented "the Project for Strengthening Post-graduate Training for Health Professionals in Primary and Secondary Level Health Facilities (2015-2020) (Phase 1)", which aims to strengthen post-graduate training for primary and secondary level health professionals. Currently, the "the Project for Strengthening Post-graduate Training for Medical Doctors and Nurses (2021-2025) (Phase 2)" is under implementation to further expand the general practice training provided in Phase 1, improve the quality of post-graduate education for nurses and midwives, and strengthen the management capacity of governmental institutions on the Mongolian side. The establishment of a system for post-graduate education at MJH is an important mission for MJH as a university hospital. Therefore, from the perspective of establishing a system for training healthcare professionals in Mongolia, the Project has exchanged opinions and ideas with experts from the post-graduate training project as necessary and has utilized the information to plan interventions.

As a result of the effective collaboration with other projects of JICA, there has been a synergistic effect in the functional hospital layout, proper use of equipment, efforts to implement post-graduate training based at MJH, and participation of MJH staff in the TOT and facilitator training programs.

(3) Effectiveness: high

The Project has achieved all the target evaluation indicators of the Project purpose and can be considered highly effective. Although there were delays in the construction of the hospital of the grant aid project, delays in the procurement of equipment by the Mongolian side due to a lack of budget, and the shortage of staff for MJH, successful opening of the hospital was achieved through the implementation of simulation exercises using the classrooms at MNUMS, the implementation of training in Japan and efforts by the Mongolian side to secure a budget (including allocations from MNUMS). On the other hand, due to the impact of COVID-19, it was difficult for the Project to dispatch the Japanese experts to Mongolia, which made it difficult to transfer their skills and techniques on site, even though online-training had been carried out. Therefore, at the 5th JCC, it was decided to extend the project period by about 8 months, taking into account such a situation. Consequently, the Project purpose was achieved.

However, in terms of the outputs and activities, MJH was designated as a hospital for receiving COVID-19 positive patients in Mongolia at the time of the pandemic, and the emergency medicine department in particular had a role in screening the positive patients and accepting severely ill cases, and therefore the full-scale emergency services could not be provided until March 2022. Although the revision of the curriculum described in the PDM is currently in progress, it is expected to take some time for activities related to emergency medicine to be fully achieved (the revision is scheduled to be completed in around April 2023).

In addition, with regard to the angiography apparatus provided under the grant aid project, it could not be in operation during the defect period due to an incident of water leakage at the hospital. The Project therefore planned to conduct application training, however, the training was delayed due to the COVID-19 pandemic and was finally completed in June 2022. After the training, the technical issues were solved. There were 13 catheter-based interventions conducted by the end of September 2022. Public medical insurance coverage for angiography and catheter intervention using this apparatus was also decided in late September 2022. Thus, the apparatus will be in full-scale use hereafter.

Although the Project purpose was achieved, one of the obstacles in implementing the Project was the frequent changes in the competent ministries of MJH. At the beginning of the Project, the supervisory authority was MEDS, which was transferred to the MOH in January 2019, then again to MEDS in March 2020, and then from MEDS to MNUMS in February 2022. In the meantime, the director of MJH has also changed several times and is now in its fourth generation. In addition, there have been issues such as changes in hospital personnel as a result of the replacement of the hospital director. Therefore, briefings and discussions have been given each time to all relevant personnel about university hospitals and Japanese-style management, so as to raise awareness and establish the management system of the hospital. Such a flexible approach can be said to have contributed to the achievement of the Project purpose.

(4) Impact: high

With regard to the overall goal "MJTH is functioned as a general/teaching hospital at a high level", the functions expected of a university hospital under the Project are at the stage of establishing a system for the provision of medical services in the areas of "medical services", "education" and "research". Therefore, the impact of the Project is ranked as high. Specifically, after starting outpatient services in October 2019, services were expanded to the internal medicine ward, surgical ward, surgery unit, ICU and EMS in phases. Currently, medical services for patients are provided daily, with an average of 500 outpatients per day, a bed occupancy rate of 85% and 10-20 surgeries per day.

In addition, MJH acquired ISO certification for hospital management in July 2022[13]. The fact that only a few Mongolian hospitals have acquired this ISO certification indicates one of the positive impacts of the Project's support. The provision of quality medical services under proper hospital management is a necessary foundation for establishing a system of education and research as a university hospital. In order to achieve the overall goal, further support from the Japanese side and autonomous efforts made by the Mongolian side are necessary to strengthen the education and research system, as described below.

【Japanese side】

- Support for the revision of training curriculum for implementing clinical training
- Establishment of pre-, post- and specialized training system based on MJH as focal point
- Strengthening the system for providing advanced medical services for quality medical training and medical research
- Establishment of systems for providing medical services and research for 26 diseases that are not currently treatable in Mongolia

【Mongolian side】

- Establishment of legal status for MJH (revision of the Higher Education Act)
- Securing financial resources for the stable management of MJH (including financial support from the government for education and research)
- Public medical insurance coverage for advanced medical services and advanced surgical operations to be implemented in the future
- Activities to unify the training system (unification of the two systems of MEDS and MOH)

The expected impacts of the Project include (1) the improvement of the overall medical standard in Mongolia and (2) the improvement of the health of people in Mongolia, and (3) the contribution to the appropriate use of public medical expenses and reduction of the financial burden of using medical services. Regarding (1), a number of positive impacts have been seen among medical professionals and hospitals in Mongolia as a result of activities such as holding workshops on nursing management by the department of nursing and on nosocomial infection by the department of infection control targeting the entire country, giving presentations at radiological conferences and establishing a society for medical

[13] Accredited by the Mongolian Agency for Standardization and Metrology (MASM).

information systems. In addition, former staff members trained in the Project have become directors of the National Infection Center and the First National Maternity Hospital, and there have been multiplied effects such as the establishment of patient support centers and the implementation of patient-centered hospital management.

During the outbreak of COVID-19, MJH provided advice and materials about the infection control measures practiced at MJH to other hospitals in Mongolia in response to the request from them. Citizens also showed their preference for MJH to be chosen for hospital admission in case of infection with COVID-19[14]. In terms of (2) mentioned above, MJH has made a significant contribution to improving the health of the population, with approximately 500 outpatients a day, more than 6,000 inpatients a year and 10-20 operations a day. Specifically, MJH contributes to the recovery and improvement of the health of about 140,000 patients per year in total.

In particular, the majority of the patients received at MJH are vulnerable groups such as the general public, children, women and the elderly. As the medical services at MJH are covered by public insurance, the impact of the Project is high, enabling patients to receive affordable, reliable and advanced medical services. Specifically, pancreatoduodenectomy, knee and hip endoscopic surgery, skin grafts, colorectal cancer, total gastrectomy, etc., which were previously only available at private hospitals or overseas to the wealthy, could now be performed at MJH, allowing patients to receive advanced medical services at low cost. Therefore, it can be said that patients and their families have benefited from the Project in economic terms. The implementation of the Project has resulted in a number of technical and organizational benefits, and there seem to be no negative impacts, including on environmental and social aspects.

(5) Efficiency: high

The deployment of the Japanese experts for training in Japan and in Mongolia was carried out efficiently and effectively. Specifically, prior to the opening of MJH, the Project identified the necessary preparations and issues to be solved for the opening, and based on the results, developed a plan for training in Japan, and conducted the training efficiently and effectively. Therefore, in terms of efficiency, the Project is rated as high.

For the training in Japan, the most appropriate Japanese experts in the specialized fields were assigned according to the contents of the training. Also, in the beginning, Japanese experts in the field of hospital management, such as financial planning, human resource planning and information management, were assigned for the training in Mongolia to review and follow up on what had been learnt in the training in Japan. Then, at the stage where the system had been established, Japanese experts in each medical department were assigned to provide technical advice for providing of medical services. The Mongolian side also made their utmost efforts, and appropriate inputs were provided at each stage of the pre-opening, post-opening and expansion of medical services, including early approval as a certified hospital

[14] Spread on Facebook by citizens.

with public insurance, securing of the budget for management of the hospital by MNUMS, MEDS and MOH, procurement of materials and equipment by the Mongolian side and recruitment of staff for MJH. Therefore, it is considered that the input from both Japan and Mongolia was appropriate.

With regard to the Japanese input (person-months of experts, project costs, etc.), the original plan formulated in September 2016 was revised from 88 person-months and 500 million yen to 186.05 person-months and 757 million yen in terms of achieving higher project effectiveness and achieving the project purpose at a high level. This revision was due to the fact that MJH, a university hospital, has a number of departments and divisions, as well as subdivided specialties, which necessitated the assignment of Japanese experts in many specialties. Other factors that required the additional inputs were the provision of equipment, the establishment of RIS, and the implementation of application training for the radiological equipment, which was not originally envisaged as essential for the effective implementation of the Project. In addition, an unexpected situation, such as the outbreak of COVID-19, led to an extension of the overall project period (from January 2022 to October 2022). These additional inputs and the revision of the Project period are considered to have been the best possible measures to achieve the Project purpose. In addition, although there were some delays in construction of MJH by the grant aid project, the hospital was successfully opened as a result of the flexible revision of a plan of the Project.

The fact that the Project started at the stage of planning the details of the grant aid project was considered to be beneficial to the Project, as it enabled the incorporation the knowledge on teaching hospitals in the hospital design, thereby making it more efficient in achieving the project purpose. More specifically, after starting the Project, regular discussions were held with the grant aid project and the Project gave advice on better construction of the teaching hospital.

(6) Sustainability: high

From the following perspectives, the sustainability of the effects generated by the Project is considered to be high.

1) Policy aspects

The Government of Mongolia has set out a national strategy to “establish an effective, quality and accessible healthcare system” and “achieve a healthy Mongolian people”, and towards this strategy, the quality of healthcare services and the quality of health professionals need to be improved. MJH is the only national teaching hospital in Mongolia that contributes to the strategy and is highly sustainable in terms of policy.

2) Organizational aspects

In terms of organizational aspects, MJH is currently under the governance of MNUMS and has a similar organizational structure to national university hospitals in Japan. This organizational structure has allowed MJH and MNUMS, as one organization, to jointly develop, implement, evaluate and

improve plans for medical education and clinical training. In addition, MJH has developed plans related to the organizational structure and personnel deployment of the hospital based on the advice of the Project, and the organization of the hospital has been established based on them. For example, the number of nurses is almost double that of other hospitals in Mongolia, in order to provide patient-centered care. In addition, departments that are essential for Japanese-style hospital management, such as the department of infection control, patient support center and various committees, have been established and are properly staffed and functioning properly, which was not the case in Mongolian national hospitals before. Furthermore, salaries are set higher than in other national hospitals to secure employment of staff, thus ensuring high organizational sustainability.

3) Technical aspects

In terms of the provision of medical services, there are no technical problems at the current stage, as MJH receives approximately 500 outpatients per day and has a high bed occupancy rate of 85%. However, to be established as a teaching hospital, MJH needs to provide education and training for medical professionals and medical students and conduct research to contribute to the health for Mongolian people in the future. For this purpose, further support is needed from the Japanese side for the revision of the training curriculum to implement clinical training, the establishment of pre-, post- and specialized training systems based on MJH, and the establishment of a system to provide medical services and to conduct research for 26 diseases that are not currently treatable in Mongolia. On the other hand, for the Mongolian side, further efforts are also needed to establish MJH as a center of training and research, such as holding conferences and disseminating information, and developing a curriculum to unify the two training systems, led by MEDS and MOH. Such efforts would ultimately enable MJH to become a teaching hospital of international standard in the future.

4) Financial aspects

Regarding finances, the hospital was in deficit when it first opened and had to rely on government subsidies, although in 2021 it was operating in the black. However, in order to conduct education and research at an advanced level in the future, additional outlays will be required, and it will be difficult to cover these costs with the income from medical services alone. Therefore, subsidies from MEDS and MOH are essential for the stable operation of MJH. In national university hospitals in Japan, 20% of the hospital budget comes from subsidies for education and research. The Project has explained this matter to the Mongolian side, including MEDS and MOH, at every opportunity. On the other hand, since Mongolia has no experience regarding the costs required for providing advanced medical services and conducting education and research at a high level, it is necessary to determine the costs required and those that can be reduced through future implementation. Therefore, it is necessary to provide further support for financial management in order for the teaching hospital to be properly financed and managed.

5.2 Key Factors Affecting Implementation and Outcomes

The following are the critical factors (risks/issues) that affected the outcome of the Project and the measures taken by the Project.

- Under the Ministerial Decree of MOH, MJH had been accepting COVID-19 positive patients in the inpatient wards and the emergency department from April 2021 to March 2022. As a result, services for non-COVID-19-positive patients in surgery, EMS and inpatient wards were limited. Although outpatient services were still available for general patients during that period, the number of general surgeries and inpatient admissions was limited due to the acceptance of COVID-19 positive patients, which affected the operation and management of the hospital. EMS were also not available during that period. In the meantime, the Project conducted online meetings to check the status of acceptance of COVID-19 positive patients and issues at MJH, and provided technical support and advice on measures to cope with COVID-19, based on the case of Japanese university hospitals.
- In March 2021, during COVID-19 epidemic, dispatch of Japanese experts for a short-term period was allowed to travel to Mongolia and had discussions and consultations with several departments and conducted in-hospital rounds with staff to check the situation. However, as the travel condition of Japanese experts had not yet been fully used, the information obtained through the activities of the experts in Mongolia was shared with the experts in Japan, feeding back the advice obtained from the Japanese experts to the Mongolian side.
- In June 2021, a fourth new director was appointed and at the same time there was a replacement of key executives at MJH. Therefore, it was necessary to re-establish a common understanding of the basic concept of national university hospitals and Japanese-style hospital management among the parties concerned. Therefore, it was necessary to re-establish a common understanding of the basic concept of national university hospitals and Japanese-style hospital management among the relevant stakeholders. In this context, the Japanese experts supported the establishment of the hospital management system through explanations and discussions with the relevant personnel.
- On 13 August 2021, the Ministerial Decree of MEDS was issued and MJH was placed under the direct control of MNUMS. In response, a contract was signed between MEDS and MNUMS on 24 September 2021, however, due to some ambiguities in the content, a meeting was held between MEDS and the JICA Office on 5 October 2021 to review and revise the contractual details. In response, a contract was signed between MEDS and MNUMS on 24 September 2021, however, due to lack of clarity in the content, a meeting was held between MEDS and JICA Mongolia Office on 5 October 2021 to review and revise the contractual details.
- In Mongolia, there has been a trend for national hospitals to shift to an independent financial management system. Under these circumstances, establishing a stable financial management system was essential for the recently opened MJH. Therefore, the Project has provided support to strengthen the monitoring system for income and expenditure, establishing routine financial management methods, and preparing detailed budgets, income and expenditure plans and business plans based on cost analysis.

- The Project held the 5th JCC meeting on 1 October 2021. At the meeting, the progress and challenges of Project activities were shared, and the future activity plan was discussed. In addition, the Project also discussed the impact of COVID-19 on the Project activities at the JCC. As a result, an extension of the Project period and an agreement on the revision of the PDM were concluded on both the Mongolian and Japanese sides. In the JCC, representatives from various ministries also commented that they would fully support the MJH to improve the health status of Mongolian people.
- MJH is the first university hospital in Mongolia. Therefore, it is necessary for MJH as a university hospital to have a legal status in the Higher Education Law. The law will state that MJH is the top referral hospital of all medical facilities and is responsible for advanced medical services, education and research to contribute to the health of the Mongolian people, and is therefore eligible for financial support from the Government of Mongolia. Currently, the process to revise the law is being undertaken by MEDS, and in preparation for this process, the Project has repeatedly briefed stakeholders on the legal system of university hospitals in Japan.

5.3 Evaluation on the Results of the Project Risk and Management

(1) Results of risk management

1) Measures taken by the Mongolian side

- MJH is the first university hospital in Mongolia and has three missions: medical services, education and research. It also aims to be the highest standard hospital in Mongolia with Japanese-style hospital management system. The above common understanding among the Mongolian stakeholders involved in MJH is important, and it is also necessary to establish the legal status of the hospital as a university hospital. Therefore, a WG consisting of representatives from MEDS, MNUMS and MJH was organized by MEDS, and the Project advised the WG on the concept and legal status of the teaching hospital.
- In March 2021, a new public health insurance system was introduced for all hospitals. Although MJH was receiving income from the new insurance scheme, it was considered to take time to stabilize its management as it had just opened. Therefore, the Project continuously explained to MJH, MNUMS and MEDS that financial support from the government is essential, and as a result, MEDS has provided a subsidy to MJH. In addition, in accordance with the Minister's policy of MEDS, MJH undertakes the medical examinations of all national university staff, and a contract has been signed between MJH and each national university for conducting the examinations. As a result, the own income of MJH increased, and the management was in surplus in 2021.
- Since the outbreak of COVID-19, MJH has been accepting COVID-19 positive patients in its wards, ICU and emergency department according to the Ministerial Decree of MOH, with the exception of some wards. Patients admitted to MJH with COVID-19 positive symptoms varied from mild to severe. By accepting COVID-19 positive patients, the Government of Mongolia paid a certain amount of medical expenses and the medical staff in charge of COVID-19 were given a special allowance, although the hospital could not adequately and properly operate with only the allowance

from the government. Since March 2022, MJH has ceased accepting COVID-19 positive patients and has now started providing medical services with the aim of achieving sound management. Therefore, the Project team provided support related to monitoring actual medical unit costs incurred, monthly budgetary comparison and flexible expenditure planning for the sound management of the hospital.

2) Measures taken by JICA

- The JICA Mongolia office has participated in regular meetings with MJH, MNUMS and other government authorities, expressing their opinions and requests as representatives of the Japanese side. In particular, when the budget of MJH had shortfall, JICA Mongolia Office has made recommendations to the Government of Mongolia to amend the budget. In addition, JICA Mongolia Office also held meetings with government officials, such as MEDS, MOH and MOF, and the President of MUNMS to explain and discuss the project's outline, implementation status, concerns on the implementation and the necessary support from the Mongolian side.
- JICA Mongolia Office proposed to MEDS to organize a WG within the government to discuss and resolve the issues to clarify the legal status and budget allocation for MJH. Based on the proposal, MEDS accepted and organized a WG consisting of representatives from MEDS, MNUMS and MJH.

5.4 Lessons Learned

Lessons learned and recommendations throughout the Project are as follows.

(1) Coordination with grant aid project (construction work)

The Project is a technical cooperation to establish a Japanese-style hospital management and quality medical service delivery system for MJH, which building was constructed under the grant aid project "the Project for Construction of Mongolia-Japan Teaching Hospital". However, due to repeated delays in the handover of the hospital facilities, outpatient services actually only became available in October 2019, instead of the originally planned July 2018, which affected the entire Project activities. Therefore, the Project team proposed to hold joint meetings of the parties involved in the grant aid in the first year of the Project, and held a "Joint meeting of parties involved in technical cooperation projects and grant aid" at the JICA headquarters.

After April 2019, when the hospital facilities became available for use, meetings were held on site with the JICA Mongolia Office, MNUMS and MJH from the Mongolian side, consultant and contractor from the grant aid side, and Project experts to review the progress of construction, confirm remaining work, request improvements from the perspective of the medical service provider, and continue discussions on future issues of concern.

As a result, the Project team was able to receive consideration for conducting simulations and minor facility modifications to enable efficient medical services even during construction, and the Project team was able to develop a medical service and hospital operation plan in line with the facility design concept.

In such a way, the exchange of opinions and the fostering of a common understanding among the parties involved beyond the Project related to MJH, especially with the participation of the relevant departments of JICA headquarters, and with Japanese contractor for grant aid during the construction phase, was an effective measure in advancing the Project.

(2) Technical assistance with concern for the effects of construction delays

Due to the delay in the construction of the hospital by the grant aid project, the content and schedule of the technical assistance originally planned for the Project had to be revised. In addition, due to the delay in the opening of the hospital, the Mongolian side was not able to receive the full amount of its originally planned budget, and was unable to hire all of the necessary staffs and procure the necessary materials and equipment.

For this reason, the Project team has supported the development of regulations, manuals, etc., and the implementation of simulations through training in Japan and on-site training, and established an organizational structure so that the hospital could be opened promptly when the facilities were handed over and the Mongolian side was prepared. After MJH started outpatient services in October 2019, Japanese experts were dispatched without interruption to provide on-site guidance and complementary technical support through training in Japan to ensure that patient-centered medical services were appropriately provided and that ward, operation theater, and ICU services could also be smoothly initiated. In addition, online guidance continued during the period of travel restrictions due to the influence of COVID19 expansion. As a result, a system was established in which medical departments, clinical central laboratory, pharmaceutical department, and others collaborate to provide services in outpatient care, and awareness of patient-centered services has spread. In addition, preparations were also made on the part of MJH to launch services in hospital wards and other areas. Thus, when external factors necessitate a review of the work, it is possible to maximize the effectiveness of technical assistance by responding flexibly, such as adjusting the timing of dispatching experts of each field, and by making sufficient preparations as required.

(3) Recommendations for a gradual opening plan

On 16 June 2019, the building and equipment of MJH were officially handed over to the Mongolian side. However, the preparations of the Mongolian side for the opening of the hospital were insufficient. The opening of the hospital, i.e., the start of medical services required for the proper functioning of the core departments and hospital operations (patient reception, accounting, pharmacy, SPD, HIS, sterilization and disinfection, waste disposal, radiology, laboratory, linen, patient food service, facility maintenance, etc.), which required hiring staffs and providing training to increase their proficiency. On the other hand, it is difficult and risky to cover EMS in the initial stage of providing medical services, so it was decided that it would be preferable to start with outpatient internal medicine, gradually expanding to outpatient surgery, hospitalization, and operation, and only when all of these functions were available, EMS would be started.

Therefore, as a first step, Japanese experts suggested to the Mongolian side that services should be started from the outpatient department of internal medicine. The Project team also advised the Mongolian side to focus their activities on the items for starting services from the outpatient department of internal medicine in order to avoid dispersion of resources during the preparation. As such, suggestions for possible service contents in consideration of the other party's preparation status and support for efficient preparation work through concentration and selection were effective for project implementation to constraints caused by external factors.

(4) Develop a checklist and foster ownership for starting outpatient services and expanding medical services

As mentioned above, the actual reception of outpatients in internal medicine is scheduled to begin on 1 October 2019, based on the decision that the original plan of 17 June 2019 was not sufficient to accommodate and prepare the patients.

Therefore, to ensure proper preparation for outpatient services, the Project team developed a checklist for the start of outpatient services. The checklist consists of 144 items in total, largely consisting of (1) overall concept of hospital operation, (2) organizational chart and various committees and meetings, (3) general affairs (reception, accounting, HIS, facility management, sterilization, etc.), (4) quality and safety management, (5) medical care, and (6) nursing. According to this checklist, a liaison meeting was organized and held every Thursday to jointly confirm with the Mongolian side the readiness for the start of services. As a result, the outpatient services could start on 1 October 2019 as scheduled. In particular, since almost staffs in MJH had no experience in setting up a new hospital, the preparation and presentation of a detailed checklist based on the experience of Japanese experts, the holding of liaison meetings to confirm progress, and process management according to the checklist were extremely effective measures when the outpatient care service was launched.

On the other hand, after the start of outpatient services, it became necessary to prepare a new checklist for the expansion of medical services. Unlike before the opening of the outpatient department, the Mongolian side was encouraged to prepare a new checklist on their own, considering that the MJH side had accumulated know-how and expertise. This was in consideration of the ability to solve problems on one's own in similar situations in the future. As a result, MJH prepared a 200-item checklist of items required for each department, and preparations were carried out according to the checklist. As before the opening of the hospital, the Project team checked the status of preparations and provided advice on the expansion of services through liaison meetings, and as a result, services were launched in the internal medicine ward and ICU in September 2020, and in the surgery ward, operation theater, and emergency department in November 2020. This method of respecting MJH's independence and providing appropriate advice while observing the situation has contributed greatly to the improvement of MJH's ability to solve problems on their own. Similar methods are effective in other projects as well.

(5) Travel restrictions due to the influence of COVID-19 and the use of remote online systems

The COVID-19 outbreak at the end of 2019 made it difficult for Japanese experts to travel to Mongolia and receive trainees from Mongolia. To address this issue, the Project promoted the holding of consultations, monitoring, and technology transfer through an online system. Concretely, the following meetings were held.

- Holding a liaison meeting to confirm the status of preparations for the development of post-opening services (MJH executives, Embassy of Japan, JICA Mongolia Office, and Project team)
- Holding departmental committee meetings (administration and finance, SPD, IT, Infection Control, Nursing)
- Online inspection of the hospital (inspection via online system to check the operation status of MJH and its preparation status for the expansion of services)
- Meeting with the president and vice president of MNUMS (held to confirm the Project's overall policy and to confirm the way forward)
- Regular meetings with the director of MJH (held after the start of all medical services to strengthen hospital management capacity, improve service quality, etc.)
- Meeting with JICA (same as above, JICA Headquarters, JICA Mongolia Office, and Project team)
- Implementation of online seminars related to countermeasures against COVID-19
- Online hospital inspections and monitoring (using web cameras, etc., the situation in the hospital could be monitored and advice provided through the screen by connecting to Japan on time)

Although there were some limitations compared to on-site practical guidance and OJT in technology transfer, the Project team encouraged the Mongolian side to provide an agenda and materials and to request information on the issues prior to the meeting. In this way, the Mongolian side was encouraged to learn and prepare in advance, and at the same time, the Project team worked to resolve the online limitations by preparation of reports on the issues by Mongolian side, receiving the reports, and providing appropriate comments accordingly. After the travel restrictions were eased, the Project team continued to utilize the online actively to make on-site technical transfers more effective.

(6) Collaboration and involvement with related ministries and agencies

Regarding the supervisory authority of MJH, MOH was transferred from MEDS to MOH by Cabinet Order in January 2019, but was transferred back to MEDS in March 2020. Furthermore, the jurisdiction was transferred from MEDS to MNUMS in February 2022. On the other hand, in the less than three years since the first MJH director was appointed in May 2019, the directors have changed one after another, and the current director is a fourth generation. With the change of directors, there were also personnel changes, and the structure of MJH itself and the support system for MJH had to be reviewed each time. On the other hand, MNUMS personnel changes were also affected by the general elections held in June 2020, with the president and vice president being replaced.

Therefore, each time it became necessary to re-create a common understanding of the basic concepts of national university hospitals and Japanese-style hospital management, the Project team proceeded with explanations and discussions with relevant parties, and has worked to build a hospital management system led by the new hospital director.

Although MJH was transferred from MOH jurisdiction to MEDS in January 2019, as a teaching hospital, MOH support is essential to provide pre- and post-graduate training, research associated with national strategies, and quality-assured healthcare services. In addition, financial support from the government is also essential until the operation of MJH is stabilized. Therefore, at the 4th JCC, representatives of these related ministries were invited to explain the need for collaboration and support. Through the meeting, the representatives of the ministries commented on the importance of cooperating with each other and supporting MJH in order to realize innovation in the Mongolian healthcare sector and improve and enhance the health of the people, and on the importance of close communication between the organizations concerned for this purpose, and all participants agreed on these aspects. In addition, the importance of cooperation and support and the legal arrangements for university hospitals were explained to MEDS and MOH ministers, undersecretaries, and department heads as necessary to promote their understanding of the situation. As a result, a government subsidy was allocated to MJH, in addition, a draft amendment to the Law on Higher Education, which includes provisions for university-affiliated hospitals, has been submitted for consideration. In order for MJH to function as the first teaching hospital in Mongolia, it is necessary to involve all relivance ministries in the process.

(7) Efficient project management by the joint venture

In implementing the Project, the three parties, Tokushima University, Ehime University, and KRC, formed a joint venture. This is because (1) the Tokushima University has long supported MNUMS and the development of human resources in the medical and welfare fields in Mongolia, and has accepted the largest number of students from Mongolia among Japanese universities (approximately 60 students including current students), and has a wealth of experience and knowledge in the medical and welfare fields in Mongolia, and has formed a friendly relationship with personnel who play an important role in these fields. Ehime University has established a relationship with Mongolia and MNUMS through the Heart Saving Project[15] and the clinical training program, and KRC has been involved in many technical cooperation projects including those in Mongolia. The joint venture was formed based on the belief that by utilizing the strengths of the three parties, synergies could be generated and Project benefits could be maximized.

Since the members of the joint venture are based in Tokushima, Ehime, and Tokyo, online meetings were held regularly to discuss the progress of the Project, points to keep in mind when implementing the work, and to confirm the details of logistics support. Prior to the influence of COVID-19, the three parties had been gathering in Tokyo or Tokushima for meetings as necessary. A project-sharing Dropbox

[15] A project for pediatric cardiovascular care in Mongolia that began in 2001 as a non-profit activity. More than 2,000 patients have been examined and more than 350 patients have been catheterized.

has been set up so that all three parties can always access the information, documents, reports, etc. obtained. Since COVID-19, the three parties held online meetings to check the progress of the Project and to decide on the future activities of the Project.

(8) Implement effective technology transfer and interventions

As mentioned above, since the start of the Project, there have been many situations of inadequate preparation on the Mongolian side (budget, securing of personnel, materials and equipment) and changes in the implementation system with changes in personnel. Therefore, it became necessary for the Project team to be flexible and effective in its technical transfer activities and interventions, while keeping in line with the actual situation in Mongolia.

For example, with regard to the operation of radiation equipment provided by grant aid project, it was identified that technical transfer of various imaging methods according to patients' symptoms was needed. For this reason, Japanese experts in the field of radiological equipment were assigned, and at the same time, on-site training was provided by the manufacturer.

In the area of hospital finance, the Project team found that C/Ps trained in Japan were leaving their positions and that the C/Ps actually working as financiers had no experience working in a hospital site. For these reasons, they are unable to prepare budgets for the MEDS, MOH, and Ministry of Finance, and are unable to explain accurately to the Ministry side. For this reason, an additional expert was assigned to strengthen the financial system of the hospital. On the other hand, local staff, such as a medical doctor who was familiar with HIS in Mongolia, and an accountant who was familiar with Mongolian financial and accounting system, were hired to support the establishment of HIS and the financial aspect of the hospital. In addition, a contract was signed with a legal professional in terms of the legal framework for the university hospital. In this way, the identification of the necessary transfer techniques and the flexible response of assigning experts and local staff to support the transfer are very effective in terms of subsequent implementation of the intervention and its effects.

5.5 Performance

In the Project, the Embassy of Japan in Mongolia and JICA officials had the following roles and made contributions to the achievement of the Project purpose.

(1) Embassy of Japan in Mongolia

Embassy staffs participated in regular meetings with MJH and expressed their opinions and requests as representatives of the Japanese side. When the MJH budget was insufficient, proposals were made to the Ministry of Finance of Mongolia and other ministries for an increase in the government budget, as a result, the investment budget and other resources were allocated. In addition, the Embassy provided cooperation to the Minister of MOH and others regarding MJH on an as-needed basis.

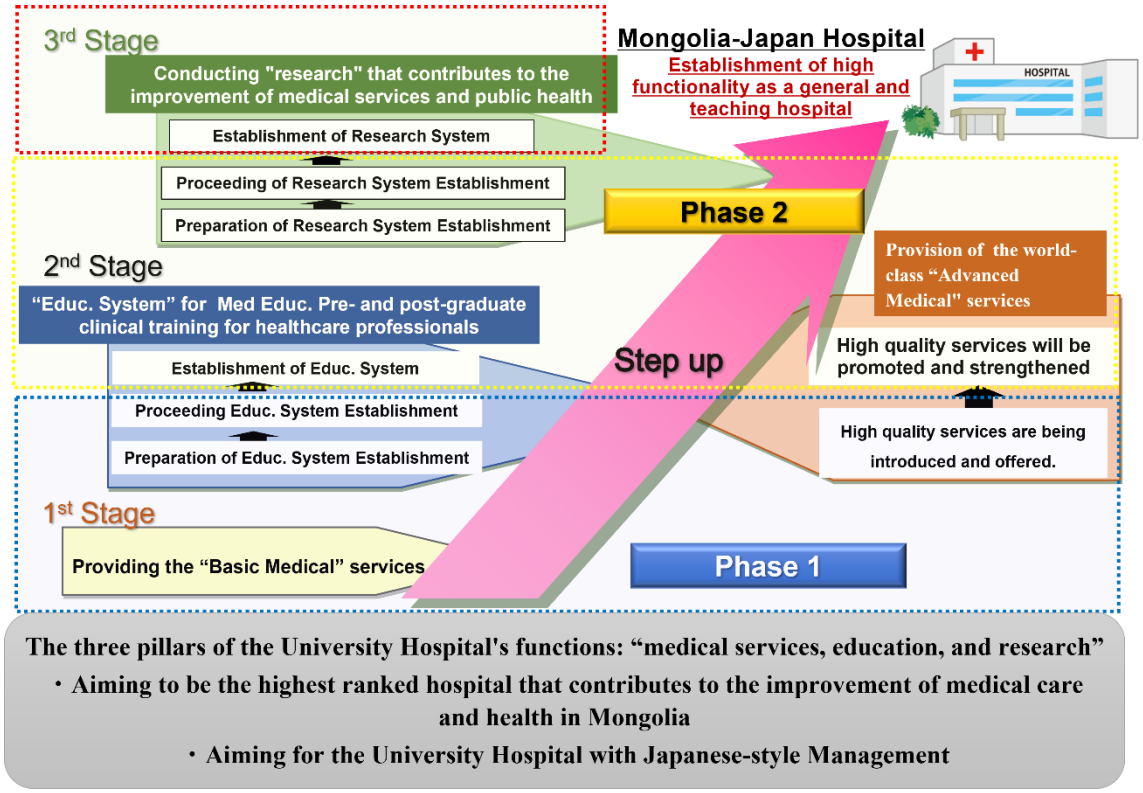
(2) JICA

As described in section 5.3, JICA Mongolia Office supervised the implementation of the Project in Mongolia through meetings with government officials, including C/Ps, and by making recommendations to the Government of Mongolian regarding budget revisions. JICA Headquarters supervises the implementation of the Project and reviews the Project policy from Japan, and through discussions at JICA Headquarters, the Project input (person-months, budget, etc.) and the Project period was reviewed from the perspective of achieving a higher level of effectiveness and achievement of the Project purpose. As a result, the Project objective was achieved.

6. For the Achievement of Overall Goals after the Project Completion

6.1 Prospects to Achieve Overall Goal

The overall goal of the Project is "MJH is functioned as a general/teaching hospital at a high level. Therefore, the Project activities were implemented starting in 2017 with "A comprehensive system is established in MJH for the provision of advanced and quality medical services." as the Project purpose. At the end of the Project period, the Project purpose was achieved.



Source: Project Team

Figure 4 Conceptual Diagram for Achieving Overall Goal

As shown in the figure above, it is necessary for MJH to establish the three pillars of medical services, education, and research in order to fulfill its role as a university hospital (general hospital and teaching hospital), however it is difficult to establish these in one step. Although the Project has achieved the areas enclosed by the blue dotted lines in the above figure, interventions related to the areas enclosed by the yellow and red colored dotted lines need to be continued in order to achieve the overall goal.

Specific initiatives include the following.

1) Securing financial resources for stable hospital operations

- Provide advanced medical services, perform surgical procedures (securing revenue).
- Government support is needed for quality clinical training and clinical research that will contribute to improving the health of Mongolia as a whole (approximately 20% of the operating costs of university hospitals in Japan are subsidized by the government. In addition, the hospital

is certified as a hospital with specific functions, and its medical fees for advanced medical services are set higher than those of other hospitals).

- Consideration of appropriate hospital size (to strengthen the function as a teaching hospital in addition to the management aspect).

2) Strengthening capacity and systems for providing advanced medical services

- Responding to 26 diseases that are not treatable in Mongolia.
- Responding to cardiovascular (heart disease), responding to cranial nerve diseases -->In particular, to establish itself as a cardiac examination center for the eastern region of Mongolia.
- Considering future role as a regional emergency center.
- Differentiation from private hospitals (providing high-quality medical care to the citizens at a reasonable cost).

3) Establishment as a teaching hospital (high expectations for MJH, the first teaching hospital in Mongolia)

- Legal status (early revision of the Higher Education Law).
- Implementation of high-quality clinical training which currently conducted by MNUMS (including the revision of curriculums).
- Establishment of pre- and post- graduate and specialized training system centered on MJH.

4) Establishment of clinical research implementation system

- Aim to establish a system that enables clinical research on a global level.
- Aim to receive the World Bank's award for excellence in medical technology and support from the MEDS' science support fund.
- Aim to publish papers internationally.

To achieve the above, the following schemes would be effective.

- JICA technical cooperation projects, dispatch of experts, acceptance of long-term trainees, and dispatch of Japan Overseas Cooperation Volunteers.
- Utilization of inter-university agreements (memorandum of understandings) with foreign universities/hospitals, etc., for improvement of clinical and research capabilities.

6.2 Plan of Operational and Implementation Structure of the Mongolian Side to Achieve Overall Goal

It is essential to collaborate with MNUMS to strengthen education and research functions in order to achieve the overall goal. There is a need for daily exchange of information between MJH and MNUMS to establish a system for planning and implementation. For example, training and research, in the emergency medicine department, the MJH staff holds a joint appointment as a special professor in the faculty of medicine of MNUMS. It is desirable to establish a system of cooperation as described above in other areas of practice as well.

The current human resource plan and staff hiring is based on the numbers needed to achieve the Project purpose of Phase I shown in Figure 3. Therefore, it is anticipated that new staffs will be needed in the future to establish training and research systems (staffs of the coordinating department for receiving training and conducting research, etc.). Therefore, it is necessary to proceed with securing staffs to achieve the overall goal. On the other hand, as the hospital expands its functions, it is necessary to secure human resources for the information technology department, although the high salary structure in the IT industry makes it difficult to secure such personnel. Therefore, for the time being, it is necessary to contract with private companies or IT specialists to regularly perform work for MJH, rather than keeping personnel internally (especially network engineers).

Staff members who had received technology transfer from the Project team in the past at MJH frequently left the hospital, necessitating technology transfer from scratch each time. Accordingly, it is important to prevent staff turnover through improvement of the work environment and other measures. In addition, to prevent hospital operations and knowledge from becoming mundane, it is necessary to establish a system that allows the entire hospital and each department to work systematically according to regulations, establish an in-house education system, and work to share information.

6.3 Recommendations for the Mongolian Side

To achieve the overall goal, the following activities are proposed to the Mongolian side.

- The goal of MJH is to be a hospital located above primary hospital and referral hospital. Although it is necessary for MJH to establish the three pillars of medical services, education, and research in order to fulfill its role as a university hospital (general hospital and teaching hospital), there are difficulties to establish these in one step. Therefore, it is essential to proceed in stages.

The specific recommendations for achieving the overall goal are as follows.

- Securing financial resources for stable hospital management.
  - Coverage by public insurance for the provision of advanced medical services and the implementation of high-level surgical operations in order to secure revenue.
  - Government financial support for quality clinical training and clinical research that contributes to improving health throughout Mongolia.
- Securing human resources and equipment
  - Securing human resources and equipment needed to provide advanced medical services and strengthen training and research functions (including securing budgets).
  - Secure budgets for maintenance and proper management of facilities and equipment.
- Establish a system as a teaching hospital
  - Legal position as the first teaching hospital in Mongolia (early revision of the Higher Education Law).
  - Building a system for the implementation of clinical training in collaboration with MNUMS (establishment of pre- and post- graduate and specialized training system centered on MJH).
  - Curriculum revision for implementation of quality clinical training.

- Unification of the two training systems (MEDS and MOH)

- Establishment of clinical research implementation system
  - Establishment of a clinical research department to conduct clinical research on a global level.
  - Promote activities to strengthen research capabilities through inter-university agreement.
- Project activities to provide advanced medical services
  - Promote activities to strengthen the capacity of medical staff through inter-university agreements with foreign universities/hospitals.
  - Strengthen the capacity of medical staff by promoting studying abroad, etc.
- Medical invasive treatment needs to be addressed through inter-university agreements
  - Permission for medical treatment by foreign physicians.
  - Clarification of defect liability in the case of medical accidents.

6.4 Monitoring Plan from the End of the Project to Ex-post Evaluation

In order to develop impact and sustainability, it is proposed to JICA to conduct the following monitoring and follow-up after the completion of the Project in order to achieve overall goal.

1) Regarding follow-up

It is required to accomplish the three roles of "medical services," "education," and "research" at MJH in order to establish itself as a teaching hospital, which is the overall goal of the Project. Specifically, MJH is expected to provide a high level of medical services, train medical personnel, and conduct research to contribute to the health of Mongolia. However, it would be difficult to achieve this goal through the efforts made by the Mongolian side alone, as they have limited experience in this field. In this regard, it is proposed that further technical assistance be provided through a technical cooperation project from the Japanese side, as follows.

Overall Goal:

MJH functions as a teaching hospital, manages in accordance with the long- and short-term business plans developed by MJH itself.

Project Purpose:

Management of the hospital is stable at MJH, and its function as a teaching hospital is established.

Output:

Output 1: Function of MJH as a teaching hospital is strengthened.

Output 2: Necessary capacity to develop long- and short-term business plans for MJH, including medical education and research, is strengthened.

Output 2: Based on MJH's long- and short-term management plans, functions of the medical department is strengthened to provide medical services.

2) Regarding Monitoring

In order to confirm the progress toward the overall goal, the implementation of the following monitoring is recommended to JICA. In principle, In principle, the monitoring shall be conducted annually, since the training is conducted on a yearly basis in Mongolia and the activities of MNUMS and MJH are also planned on a yearly basis. In addition, In view of MJH's role as a teaching hospital, a top medical institution in Mongolia, and an institution responsible for improving health in Mongolia, the following indicators will also be reviewed. In conducting monitoring, monitoring sheets will be distributed to MJH and collected. In addition, interviews with relevant parties will be conducted as necessary.

- Number of residents who received pre- and post-graduate training at MJH (including specialties, duration, etc.)
- Number of advanced medical services provided at MJH (by disease, e.g., cardiac, brain, cancer treatment)
- Number of workshops and seminars organized by MJH for stakeholders of Mongolia (including themes, number of participants, etc.)

ANNEX

Annex 1-1 Results of Japanese Expert Assignment

1. Work in Mongolia

Name	Position	2019 (May–Dec)	2020 (Jan.–Dec)	2021 (Jan.–Dec)	2022 (Jan.–Oct)	Days	Person-Month
Minoru Irahara	Chief Advisor/Hospital Management (1)	5/20-24 (5days); 6/10-17 (8days); 7/21-25 (5days); 8/18-22 (5days); 9/29-30 (2days); 10/1-3 (3days); 12/2-6 (5days)				33	1.10
Masashi Akaike	Chief Advisor/Hospital Management (1)				9/12-16 (5days)	5	0.17
Hiroshi Abo	Deputy Chief Advisor/Hospital Management (2)/Training Management (1)	5/20-31 (12days); 6/1-16 (16days); 8/18-30 (13days); 9/26-30 (5days); 10/1-13 (13days); 11/30 (1days); 12/1-14 (14days)	1/12-22 (11days)	3/15-31 (17days); 4/1-30 (30days); 5/1-18,26 (19days); 9/6-19,25-30 (20days); 10/1,9-20 (13days)	3/30,31 (2days); 4/1-30 (30days); 5/11-18 (8days); 6/13-30 (18days); 7/1-8 (8days); 9/2-30 (29days)	279	9.30
Minoru Irahara	Hospital Management (Nursing /Patient Management, Emergency Medicine, Supply Processing & Distriobution (SPD) (1)				'5/11-18 (8days); 7/4-8 (5days); 9/12-16 (5days)	18	0.60
Takeshi Naito	Hospital Management (Nursing /Patient Management, Emergency Medicine, Supply Processing & Distriobution (SPD) (2)					0	0.00
Takashi Higaki	Hospital Manegement (Hospital Infection Control, Medical Information system (IT))(1)	5/26-29 (4days); 7/21-24 (4days); 8/14-16 (3days); 9/30 (1days); 10/1-4 (4days); 12/2-6 (5days)			9/12-16 (5days)	26	0.87
Hidemi Takada	Hospital Manegement (Hospital Infection Control, Medical Information system (IT))(2)					0	0.00
Yasunori Oka	Hospital Manegement (Hospital Infection Control, Medical Information system (IT))(3)	6/15-17 (3days)				3	0.10
Tomoko Takagai	Nursing/Patinet Management (1)	6/15-18 (4days); 8/18-21 (4days); 9/29-30 (2days); 10/1-3 (3days)				13	0.43
Hiroko Kume	Nursing/Patinet Management (2)	5/20-24 (5days); 10/7-11 (5days)				10	0.33
Rie Fujikawa	Emergency Medicine	6/10-30 (21days); 7/1-4 (4days) :280;263; 9/26-30 (5days); 10/1-20 (20days); 11/1-30 (30days); 12/1-20 (20days)	2/2-21 (20days) 52550724	6/8-30 (23days); 7/1-31 (31days); 8/1-30 (31days); 9/1-30 (30days); 10/1-8 (8days); 10/9-12/29	4/20-30 (11days); 5/1-20 (20days); 6/10-30 (21days); 7/1-25 (25days)	320	10.67
Hisamichi Tauchi	Hospital Infection Control (1)	5/26-29 (4days); 6/15-17 (3days); 9/10-13 (4days)			6/27-30 (4days); 7/1 (1days); 9/12-16 (5days)	21	0.70
Harutaka Aono	Hospital Infection Control (2)	5/26-29 (4days); 9/10-13 (4days)			9/12-16 (5days)	13	0.43
Hiroshi Kimura	Hospital Infection Control (3)	5/26-29 (4days); 9/10-13 (4days)			6/27-30 (4days); 7/1 (1days)	13	0.43
Hitoshi Miyamoto	Hospital Infection Control (4)	5/26-29 (4days); 9/10-13 (4days)			9/12-16 (5days)	13	0.43
Eizen Kimura	Medical Information system (IT) (1)	5/29-31 (3days); 6/1 (1days)			6/13-17 (5days)	9	0.30
Teruhito Kido	Medical Information system (IT) (2)	5/26-29 (4days); 9/30 (1days); 10/1-4 (4days)				9	0.30
Satomi Sakita	Medical Information system (IT) (3)	5/26-29 (4days); 7/21-25 (5days); 12/1-6 (6days)				15	0.50
Masato Tagi	Medical Information system (IT) (4)	5/29-31 (3days); 6/1 (1days); 7/29-31 (3days); 8/1-2 (2days); 9/26-30 (5days); 10/1-3 (3days)				17	0.57
Daigo Sano	Medical Information system (IT) (5)	5/20-31 (12days); 6/1 (1days); 9/10-30 (21days); 10/1-2 (2days); 11/7-23 (17days)	1/20-30 (11days)			64	2.13
Yasuo Akiyama	Supply Processing & Distriobution (SPD)			9/15-30 (16days); 10/1-8,20-29 (18days) 11日	5/18-31 (14days); 6/1-3 (3days)	51	1.70
Takayuki Nakao	Clinical Examination	5/20-24 (5days); 6/12-19 (8days); 7/21-25 (5days); 8/18-24 (7days); 9/26-30 (5days); 10/1-3 (3days); 12/2-5 (4days)			9/12-16 (5days)	42	1.40
Takayuki Nakao	Clinical Examination	5/20-5/24 (5days); 7/21-25 (5days); 9/10-13 (4days); 10/7-11 (5days)			7/4-8 (5days)	24	0.80
Yoshiaki Onishi	Medicall Engineering	5/20-5/24 (5days); 7/21-25 (5days); 9/10-13 (4days); 10/7-11 (5days); 12/2-6 (5days)			7/4-8 (5days)	29	0.97
Naonobu Kawata	Radiological Examination				7/4-8 (5days)	5	0.17
Akira Kitora	Hospital Finance	5/20-24 (5days); 6/12-19 (8days); 7/29-31 (3days); 8/1-2 (2days); 9/10-13 (4days)				22	0.73
Nobuyuki Hashimoto	Financial Management			8/20-31 (11days); 9/1-30 (30days); 10/1-31 (31days); 11/1-30 (30days); 12/1-15 (15days)	2/9-28 (20days); 6/3-30 (28days); 7/1-22 (22days)	187	6.23
Akane Suzuki	Hospital Administration	5/20-24 (5days); 6/15-18 (4days); 7/21-25 (5days); 12/5-7 (3days)				17	0.57
Fumie Murasawa	Training Management (4) / Communication Skills	5/20-24 (5days); 6/10-17 (8days); 7/21-25 (5days); 8/18-22 (5days); 9/29-30 (2days); 10/1-3 (3days); 12/2-5 (4days)			5/11-18 (8days); 7/4-8 (5days); 9/12-16 (5days)	50	1.67
Shino Nishimagi	Project Coordination (1)/Training Management (2)	6/9-29 (21days); 7/17-31 (15days); 8/1-3 (3days); 10/23-31 (9days); 11/1-11/9 (9days)		9/6-19,28-3 (17days); 10/1-20 (20days)	4/13-30 (18days); 5/1-20 (20days); 9/11-30 (20days)	152	5.07
Ryohei Sakurai	Project Coordination (2)/Training Management (3)	11/3-16 (14days); 12/1-18 (18days)	1/25-31 (7days); 2/1-2/21 (21days)			60	2.00
Kaito Onishi	Project Coordination (2)/Training Management (3)			9/29-30 (2days); 10/1-31 (31days); 11/1-3 (3days)	4/1-27 (27days); 6/3-30 (28days); 7/1-8 (8days); 9/2-30 (29days)	128	4.27
	Results				Results	1,648	54.94

2. Work in Japan

Name	Position	2019 May	2019 Jun	2019 Jul	2019 Aug	2019 Sep	2019 Oct	2019 Nov	2019 Dec
Minoru Irahara	Chief Advisor/Hospital Management (1)							11/18-19 (2days)	
Masashi Akaike	Chief Advisor/Hospital Management (1)								
Hiroshi Abo	Deputy Chief Advisor/Hospital Management (2)/Training Management (1)							11/18-19 (2days)	12/23-24 (2days)
Minoru Irahara	Hospital Management (Nursing /Patient Management, Emergency Medicine, Supply Processing & Distribution (SPD) (1)								
Takeshi Naito	Hospital Management (Nursing /Patient Management, Emergency Medicine, Supply Processing & Distribution (SPD) (2)								
Takashi Higaki	Hospital Manegement (Hospital Infection Control, Medical Information system (IT)) (1)							11/18 (1days)	
Hidemi Takada	Hospital Manegement (Hospital Infection Control, Medical Information system (IT)) (2)								
Yasunori Oka	Hospital Manegement (Hospital Infection Control, Medical Information system (IT)) (3)								
Tomoko Takagai	Nursing/Patinet Management (1)							11/18-22 (5days)	
Hiroko Kume	Nursing/Patinet Management (2)								
Rie Fujikawa	Nursing/Patinet Management (3)								
Jun Oto	Emergency Medicine								
Hisamichi Tauchi	Hospital Infection Control (1)								
Harutaka Aono	Hospital Infection Control (2)								
Eizen Kimura	Medical Information system (IT) (1)								
Teruhito Kido	Medical Information system (IT) (2)								
Satomi Sakita	Medical Information system (IT) (3)								
Daigo Sano	Medical Information system (IT) (5)								
Sumyung Kaise	Medical Information system (IT) (5)								
Yasuo Akiyama	Supply Processing & Distribiution (SPD)								
Akira Tangoku	Surgery								
Katsuji Inoue	Cardiology								
Tomoyuki Kido	Radiology								
Takayuki Nakao	Clinical Examination								
Yoshiaki Onishi	Medicall Engineering								
Naonobu Kawada	Radiological Examination								
Akira Kitora	Hospital Finance								
Nobuyuki Hashimoto	Financial Management								
Akane Suzuki	Hospital Administration								
Fumie Murasawa	Training Management (4) / Communication Skills								
Shino Nishimagi	Project Coordination (1)/Training Management (2)							11/18-22 (5days)	12/9-10 (2days)
Ryohei Sakurai	Project Coordination (2)/Training Management (3)								
Kaito Onishi	Project Coordination (2)/Training Management (3)								

Name	2020 Jan.	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 Jun	2020 Jul	2020 Aug	2020 Sep	2020 Oct	2020 Nov	2020 Dec
Minoru Irahara	1/10 (1days)		3/25-27 (3days)		5/15, 22 (2days)	6/4 (1days)		8/5,20-24,28 (5days)	9/2,11,18 (3days)	10/5,14,16 (3days)	11/9,24 (2days)	12/11 (1days)
Masashi Akaike												
Hiroshi Abo	1/10 (1days)		3/16-18,26-30 (6days)	4/8-10, 15-17 (6days)	5/12-14, 20-21 (5days)	6/1-4, 12,17,18,22 (8days)	7/1,6,19,22,27,28 (6days)	8/3-5,11, 17,20,21,31 (8days)	9/2,3,8,11, 18,23,25 (7days)	10/2,9,26,27 (4days)	11/4,5,6, 10,11 (5days)	12/11, 15, 18, 23, 25 (5days)
Minoru Irahara												
Takeshi Naito												
Takashi Higaki					5/15 (1days)	6/4 (0days)		8/5,21,24 (3days)	9/2 (1days)	10/5,14 (2days)	11/5,9 (2days)	12/3 (1days)
Hidemi Takada												
Yasunori Oka												
Tomoko Takagai								8/17-20 (4days)	9/2,8-10 (4days)	10/5,9,14, 16 (4days)	11/9,24 (1days)	12/11 (1days)
Hiroko Kume												
Rie Fujikawa												
Jun Oto												
Hisamichi Tauchi					5/13-14 (2days)	6/3-4 (1days)		8/25-28 (4days)	9/2,24 (2days)	10/7,8 (2days)	11/11 (1days)	12/9 (1days)
Harutaka Aono												
Eizen Kimura					5/11-15 (5days)	6/24-26 (3days)		8/25 (1days)			11/25 (1days)	12/22 (1days)
Teruhito Kido												
Satomi Sakita												
Daigo Sano		2/5-7 (3days)	3/25-27 (3days)	4/8-10, 15-17 (6days)	5/18-22 (5days)	6/4,15-18,26 (6days)	7/6,20,27 (3days)	8/21,24,25 6日間				
Sumyung Kaise										10/19 (1days)	11/25 (1days)	12/22 (1days)
Yasuo Akiyama								8/5,17,19 ,20 (4days)	9/2,30 (2days)	10/5,14, 16 (3days)	11/9,24 (2days)	12/3 (1days)
Akira Tangoku												
Katsuji Inoue												
Tomoyuki Kido												
Takayuki Nakao												
Yoshiaki Onishi												
Naonobu Kawada												
Akira Kitora								8/3,11,18,21,25,31 (6days)	9/8,30 (2days)	10/5,6,14 (3days)	11/10 (1days)	12/1 (1days)
Nobuyuki Hashimoto				4/8-10,15-17,20-24, 27,30 (13days)	5/7-15 (7days)	6/2,4,8,16,22,29 9日間	7/20,22,27 (3days)	8/3,5,11,18, 20,25,31 (7days)	9/7,8,11,15, 18,25,29 (7days)	10/6,13, 27 (3days)	11/4,10, 17,19,24 (5days)	12/1,4,7,8,11,15,16,18,22,23 (8days)
Akane Suzuki												
Fumie Murasawa										10/26,27 (1days)	11/24 (1days)	12/11 (1days)
Shino Nishimagi		2/3-4 (2days)	3/23-27 (5days)		5/25-29 (5days)	6/2-15 (10days)	7/1,10 (2days)	8/6-7,17 (3days)	9/2-4, 9-14 (7days)	10/7-14 ,26-27 (8days)	11/9-11, 25,26 (5days)	12/11-16 (4days)
Ryohei Sakurai		2/27-28 (1days)	3/25-26 (2days)		5/18-22 (5days)	6/2-8 (5days)	7/6-10 (5days)	8/17-31 (8days)	9/4,7,9,11, 15,18,25,30 (8days)	10/9-14 ,26-30 (7days)	11/4-6,11, 16,26,30 (7days)	12/2,7,14, 16,21,23 (6days)
Kaito Onishi												

Name	2021 Jan.	2021 Feb	2021 Mar	2021 Apr	2021 May	2021 Jun	2021 Jul	2021 Aug	2021 Sep	2021 Oct	2021 Nov	2021 Dec
Minoru Irahara	1/21 (1days)	2/19,26 (2days)	3/4,19 (2days)	4/8,9,14, 15,16 (5days)	5/12,14,20, 21,24 (5days)	6/3,4,10, 11,29 (5days)	7/30 (1days)	8/20 (1days)	9/16-17 (2days)	10/1,22 (2days)	11/19,22 (2days)	12/16,22 (2days)
Masashi Akaike												
Hiroshi Abo	1/12, 13, 21, 29 (4days)	2/17, 24,2[illegible] (3days)	3/4,10 (2days)		5/27,28 (2days)	6/2,10, 11,22 (4days)	7/13, 29 (2days)	8/13, 20 (2days)			11/2.4.9.22 (4days)	12/14-17 (4days)
Minoru Irahara												
Takeshi Naito					5/14,21 (2days)	6/4,11 (2days)	7/30 (1days)		9/17 (1days)	10/1 (1days)		
Takashi Higaki	1/21 (1days)	2/26 (1days)	3/26 (1days)	4/8,9,14, 15 (4days)	5/12,14, 21,24 (4days)	6/3,4,11, 14 (4days)	7/30 (1days)	8/20 (1days)	9/16-17 (2days)	10/1 (1days)	11/19 (1days)	
Hidemi Takada												
Yasunori Oka				4/16 (1days)	5/21 (1days)	6/11 (1days)						
Tomoko Takagai	1/21 (1days)	2/19 (1days)		4/8,9,14, 15,16 (5days)	5/12,14,19, 21,26 (5days)	6/3,4,10, 11,29 (5days)	7/7,21, 28,30 (4days)	8/20 (1days)	9/17,22 (2days)	10/1 (1days)	11/17,19 (2days)	12/6.22 (2days)
Hiroko Kume												
Rie Fujikawa												
Jun Oto												
Hisamichi Tauchi	1/13 (1days)	2/3 (1days)	3/9,10 (2days)	4/20,21, 22 (3days)	5/14,20, 21 (3days)	6/11,14, 16 (3days)	7/21,30 (2days)	8/18 (1days)	9/15,17 (2days)	10/1 (1days)	11/17 (1days)	12/15 (1days)
Harutaka Aono												
Eizen Kimura	1/13 (1days)	2/16 (1days)	3/29 (1days)	4/13,27 (2days)	5/10,11,27 (3days)	6/11,14,22 (3days)	7/20,27 (2days)	8/31 (1days)	9/20 (1days)	10/1 (1days)	11/19 (1days)	12/23 (1days)
Teruhito Kido						6/11,14,22 (3days)	7/20,27 (2days)					
Satomi Sakita												
Daigo Sano												
Sumyung Kaise	1/19 (1days)	2/2 (1days)	3/2,16 (2days)	4/13,27 (2days)	5/11,18 (2days)	6/22 (1days)	7/6,7, 20,27 (4days)	8/3,10,17 24,31 (5days)	9/13-14 (2days)		11/1.2.12 (3days)	
Yasuo Akiyama	1/21 (1days)	2/26 (1days)	3/26 (1days)	4/8,9,14, 15,16 (5days)	5/12,14,21 (3days)	6/4,10, 11 (3days)	7/30 (1days)	8/20 (1days)	9/16-17 (2days)	10/1 (1days)	11/19 (1days)	
Akira Tangoku							7/30 (1days)	8/20 (1days)	9/17 (1days)	10/1 (1days)	11/19 (1days)	
Katsuji Inoue												
Tomoyuki Kido												
Takayuki Nakao												
Yoshiaki Onishi												
Naonobu Kawada												
Akira Kitora	1/26 (1days)	2/26 (1days)	3/4 (1days)	4/6,13, 20,27 (4days)	5/11,14, 19,21 (4days)	6/4,10, 11,29 (4days)	7/20,30 (2days)	8/10,20 (2days)	9/17 (1days)	10/1 (1days)	11/19 (1days)	12/7 (1days)
Nobuyuki Hashimoto	1/8,12,19, 21,26,27,29 (5days)	2/2,3,5, 8-10,16,17, 19,24-26 (10days)	3/2,11,16,19, 23,26,30 (6days)	4/6,9,13, 20,27,30 (5days)	5/11,18,19, 25 (3days)	6/5,9,30 (3days)	7/6,7,19- 21,26-30 (9days)	8/2-6, 10- 13, 19 (10days)				12/21,28 (2days)
Akane Suzuki				4/16 (1days)	5/14 (1days)	6/10,11 (2days)	7/30 (1days)			10/1 (1days)	11/19 (1days)	
Fumie Murasawa				4/9,16 (2days)	5/14,21 (2days)	6/4,11 (2days)	7/30 (1days)	8/20 (1days)		10/1 (1days)	11/19 (1days)	12/16 (1days)
Shino Nishimagi	1/12,13, 20,21 (4days)	2/8,18,22 (3days)	3/2,9,10, 12,25 (5days)	4/1,2,5,6 (4days)	5/18-31 (10days)	6/1-4, 22-29 (10days)	7/8-21 (10days)	8/3,5,9,12,13 ,16-20 (10days)		10/25 (1days)	11/1-5,22 (5days)	12/13-14, 29 (3days)
Ryohei Sakurai	1/13,15,20, 21,28,29 (6days)	2/3,5,9,12, 19,25 (6days)	3/1,9,12, 24,26,29 (6days)	4/2,7,14, 22,27 (5days)	5/6,7, 10-14,17 (8days)	6/7-11, 14-18 (10days)	7/1-7, 26-30 (10days)					
Kaito Onishi								8/3,5,10,17- 20,23,24,26,27,30,31 (9days)	9/1,9,10,14,15,17,18, 24,27,28 (10days)		11/8,10, 17,19 (4days)	12/15-17 (3days)

Name	2022 Jan.	2022 Feb	2022 Mar	2022 Apr	2022 May	2022 Jun	2022 Jul	2022 Aug	2022 Sep	2022 Oct	Days	Person-Month
Minoru Irahara	1/11,28 (2days)	2/16 (1days)									55.2	2.76
Masashi Akaike					5/25,30 (2days)			8/17-23 (5days)	9/19,26,27 (3days)		10.0	0.50
Hiroshi Abo		2/25,28 (2days)	3/1,3-5 (4days)		5/19,20,2 4,25 (4days)			8/6-14,17- 24,27-29 (20days)		10/1-11 (11days)	132.6	6.63
Minoru Irahara				4/12,13, 15-20, 25-28 (10days)	5/2,6,9, 20,27,30 (6days)	6/3,6,10,13 ,17,20,24,2 7 (8days)	7/1,12- 15,19,20,22 ,25,26 (10days)	8/1-3,8, 17,19-23, 26,29,30 (10days)	9/5,9,20 21,26,27,30 (7days)		51.2	2.56
Takeshi Naito	1/11 (1days)								9/14,22 (2days)		10.0	0.50
Takashi Higaki	1/11 (1days)		3/11,16 (2days)	4/7,27,28 (3days)	5/25,30 (2days)	6/15,24 (2days)	7/11-15 (5days)	8/17-26 (10days)	9/5-9, 26-30 (10days)		67.0	3.35
Hidemi Takada							7/13,14 (2days)	8/22,23 (2days)	9/14,22 (2days)		6.0	0.30
Yasunori Oka			3/11 (1days)				7/13,14 (2days)	8/22,23 (2days)	9/14,22 (2days)		10.0	0.50
Tomoko Takagai	1/11,26, 28 (3days)	2/9,16,23 (3days)	3/4,23 (2days)	4/1,7,27 (3days)	5/18,25 (2days)	6/8,29 (2days)	7/5,19,20 (3days)	8/1-5, 17-23 (10days)	9/13,14, 28,29,30 (5days)		81.6	4.08
Hiroko Kume		2/9,16 (2days)	3/3,11,23 (3days)	4/1,7,27 (3days)	5/18,25 (2days)	6/8,29 (2days)	7/5,19,20 (3days)	8/22,23 (2days)	9/14,15,28 (3days)		20.0	1.00
Rie Fujikawa	1/11,26, 28 (3days)	2/9,16,23 (3days)	3/3,11,23 (3days)	4/1,4,7 (3days)	5/25,31 (2days)		7/28,29 (2days)	8/1-5, 17-23 (10days)	9/14,15, 27,28,29 (5days)		30.6	1.53
Jun Oto									9/1-30 (20days)		20.0	1.00
Hisamichi Tauchi	1/11,19 (2days)	2/16 (1days)	3/7,16 (2days)	4/27,28 (2days)	5/25,30, 31 (3days)	6/20,21,2 2 (3days)	7/13,14 (2days)	8/17-26 (10days)	9/8-10, 20-22 (6days)		65.4	3.27
Harutaka Aono	1/19 (1days)	2/16 (1days)		4/27,28 (1days)			7/13,14 (2days)	8/17-26 (10days)	9/8-10, 21,22 (6days)		21.4	1.07
Eizen Kimura	1/21,28 (2days)	2/10 (1days)	3/11,24 (2days)	4/15,22,28 (3days)	5/10,30 (2days)	6/9,10 (2days)	7/13,14 (2days)	8/17-26 (10days)			53.0	2.65
Teruhito Kido							7/13,14 (2days)				7.0	0.35
Satomi Sakita							7/13,14 (2days)	8/17-26 (11days)			12.8	0.64
Daigo Sano											26.0	1.30
Sumyung Kaise	1/21 (1days)	2/24,25,28 (3days)	3/7-11,14- 18 (10days)	4/15,18- 22,25-28 (10days)		6/6-10 (5days)					55.0	2.75
Yasuo Akiyama	1/11,28 (2days)			4/19 (1days)	5/25 (1days)		7/11,12 (2days)	8/1-3,8, 17,19-23, 26,29,30 (10days)	9/9,10, 20,21,22 (4days)		52.0	2.60
Akira Tangoku	1/11 (1days)										6.0	0.30
Katsuji Inoue											0.0	0.00
Tomoyuki Kido	1/11 (1days)										1.0	0.05
Takayuki Nakao							7/11,12 (2days)	8/18-23 (3days)	9/14,22 (2days)		7.4	0.37
Yoshiaki Onishi							7/11,12 (2days)	8/18-23 (3days)	9/14,22 (2days)		7.2	0.36
Naonobu Kawada							7/11,12 (2days)	8/22,23 (1days)	9/14,22 (2days)		5.2	0.26
Akira Kitora	1/18,25, 28 (3days)	2/1,10, 22 (3days)	3/4,22, 29 (3days)	4/5,12, 19,26 (4days)	5/25,31 (2days)	6/20,21 (2days)	7/11-14 (4days)	8/1-5, 17-23 (10days)	9/12-16, 20-30 (13days)		80.0	4.00
Nobuyuki Hashimoto	1/6,11, 18,25 (3days)	2/1,8 (2days)	3/15 (1days)					8/2,17-24 8/3,9 (10days)	9/5- 9,14,16,20- 22,26-30 (9days)		130.2	6.51
Akane Suzuki											7.0	0.35
Fumie Murasawa	1/11,28 (2days)	2/9,16,22 (3days)	3/4,11 (2days)	4/19,27 (2days)	5/25 (1days)	6/8,15 (2days)	7/11,12 (2days)	8/23 (1days)	9/10,22, 26,27,28 (5days)		34.0	1.70
Shino Nishimagi	1/9-11 (3days)	2/9,10, 14,15 (4days)	3/3,4,15, 18,22,23 (6days)	4/4-11 (6days)	5/25,26, 27,30,31 (5days)	6/14-28 (11days)	7/1,4-15, 21-31 (20days)	8/1-5, 12-26 (20days)	9/1-7 (6days)	10/1-11 (11days)	215.0	10.75
Ryohei Sakurai											105.4	5.27
Kaito Onishi	1/12,14,21 (3days)	2/2,16,24 (3days)	3/11,16- 18,22-24 (7days)	4/28 (1days)	5/6,9,10,17,1 8,25,30 (7days)		7/11,13-15, 19-24,27-31 (14days)	8/3-5,8-10,15- 26,29,30 (20days)	9/1 (1days)	10/1-11 (11days)	93.0	4.65
										Results	1478.20	73.91

Note — ork in Mongolia — wn Expense (Work in Mongolia & Japan) — rk in Japan

Annex 1-2

List of Counterparts

No.	Name	Position
MONGOLIAN NATIONAL UNIVERSITY OF MEDICAL SCIENCES		
1	Khurelbaatar.N	President of Mongolian National University of Medical Sciences
2	Damdindorj.B	Director of Division for graduate Education Policy and Management
3	Batbaatar.G	Director of Division for Teacher Development and E-learning
4	Sodnomjamts. E	Director of Division for Finance and Economics
5	Enkhtur. Ya	Director of Division for Undergraduate Education Policy and Management
6	Amartuvshin. B	Director of Division for International Relations
7	Amartuvshin. Kh	Head of Pharmacy, Division for University Hospital Development
MONGOLIA-JAPAN HOSPITAL		
8	Adilsaikhan.M	Director of Mongolia-Japan Hospital
9	Naranpurev.M	Deputy Director of Clinics, MJH
10	Khaliun.B	Deputy Director of Administration and Finance, MJH
11	Bolortuya.B	Deputy Director of Quality and Safety, MJH
12	Bazarsuren. J	Head of HR department
13	Enkhzaya. T	Nursing Care Head Manager
14	Gerelt-Od. O	Head of strategy planning & monitoring
15	Munkhzul. O	Head of IT department
16	Erdenechimeg. D	Head of Registration, Insurance statistics department
17	Purevdorj. M	Head of Procurement & Supply department
18	Enkh-Urel. E	Head of Technical assistant department
19	Damdin. Ts	Head of Sterilization, Laundry department
20	Altanzul. Ts	Head of Finance department
21	Amarbayar. S	Head of Facility management department
22	Doljin. U	Head of Medical nutrition department
23	Zolzaya. D	Head of Infection prevention & control department
24	Elbegzaya. S	Manager of Risk department
25	Oyunchimeg. Ts	Head of quality management of medical care & services certification of medical professionals
26	Manaljav. Ts	Head of Inpatient Inward
27	Odgerel. Ts	Head of Outpatient Inward
28	Batchimeg. N	Head of Medical Central Laboratory
29	Bayarmaa. E	Head of Pathology department
30	Tuvshinjargal. D	Head of Radiology department

31	Davaadorj. D	Head of Endoscopy department
32	Narangaraw. N	Head of Medicine department
33	Myagmartseren. D	Head of Customer promotion center
34	Baljinnyam. A	Head of Rehabilitation center
35	Anuudari. Z	Head of Health promotion center
36	Ariuntsetseg. G	Head of Emergency department
37	Burmaa. S	Head of Anesthesia department
38	Baatarsuren. B	Head of Surgical department
39	Altanchimeg. S	Head of Intensive care unit
40	Towuudorj. A	Head of Neurology department
41	Ganchimeg. P	Head of Ear, Nose & Throat
42	Uranchimeg. D	Head of Optical department
43	Amartuvshin. T	Head of Gynecology
44	Tsolmon. U	Head of Cardiology department
45	Erdenetuya. E	Head of Pediatrics department
46	Bilegsaikhan. L	Head of Marketing

Annex 1-3 List of Training in Japan

No.	Theme	Place	Date	Participants
1st	Overview of the Japanese Hospital System	Tokushima University Ehime University	14 days June 25 to July 8, 2017	16 members MNUMS
2nd	Hospital Management	Tokushima University	12 days October 22 to November 2, 2017	9 members MNUMS
3rd	Nursing Management	Tokushima University	14 days November 12 to November 25, 2017	6 members MNUMS
4th	Nosocomial Infection Control	Ehime University, Japanese Society of Environmental Infection	10 days from February 21 (Wed.) to March 2 (Fri.), 2018	4 members MNUMS
5th	Hospital Information System	PSP Corporation	17 days February 21 to March 9, 2018	IT team: 4 members MNUMS
		PSP Corporation, Ehime University	10 days February 21 to March 2, 2018	Physician team: 3 members MNUMS
6th	Hospital Management (Clinical Laboratory Technology and Clinical Engineering Technology)	Tokushima University	7 days February 25 to March 3, 2018	6 members MNUMS
7th	Hospital Management (Simulation Planning)	Tokushima University	8 days July 22 to July 29, 2018	9 members MNUMS
8th	Nosocomial Infection Control	Ehime University	7 days September 2 to September 8, 2018	6 members MNUMS
9th	Observation training	ICA Headquarters Tokushima University	7 days September 2 to September 8, 2018	3 officials MNUMS
10th	Team Medicine (Surgical Section)	Tokushima University	5 days November 18 to November 22, 2019	8 members MJH
11th	Team Medicine (Patient Support Center/ICU)	Tokushima University	5 days November 18 to November 22, 2019	5 members MJH
12th	Hospital management (financial management, logistics management, nursing/patient management, risk management, hospital information system and nosocomial infection control	Tokushima University Ehime University	7 days from August 17 to 24, 2022	9 members MJH

Source: Project Team

Annex 1-4 Revised Plan of Operation

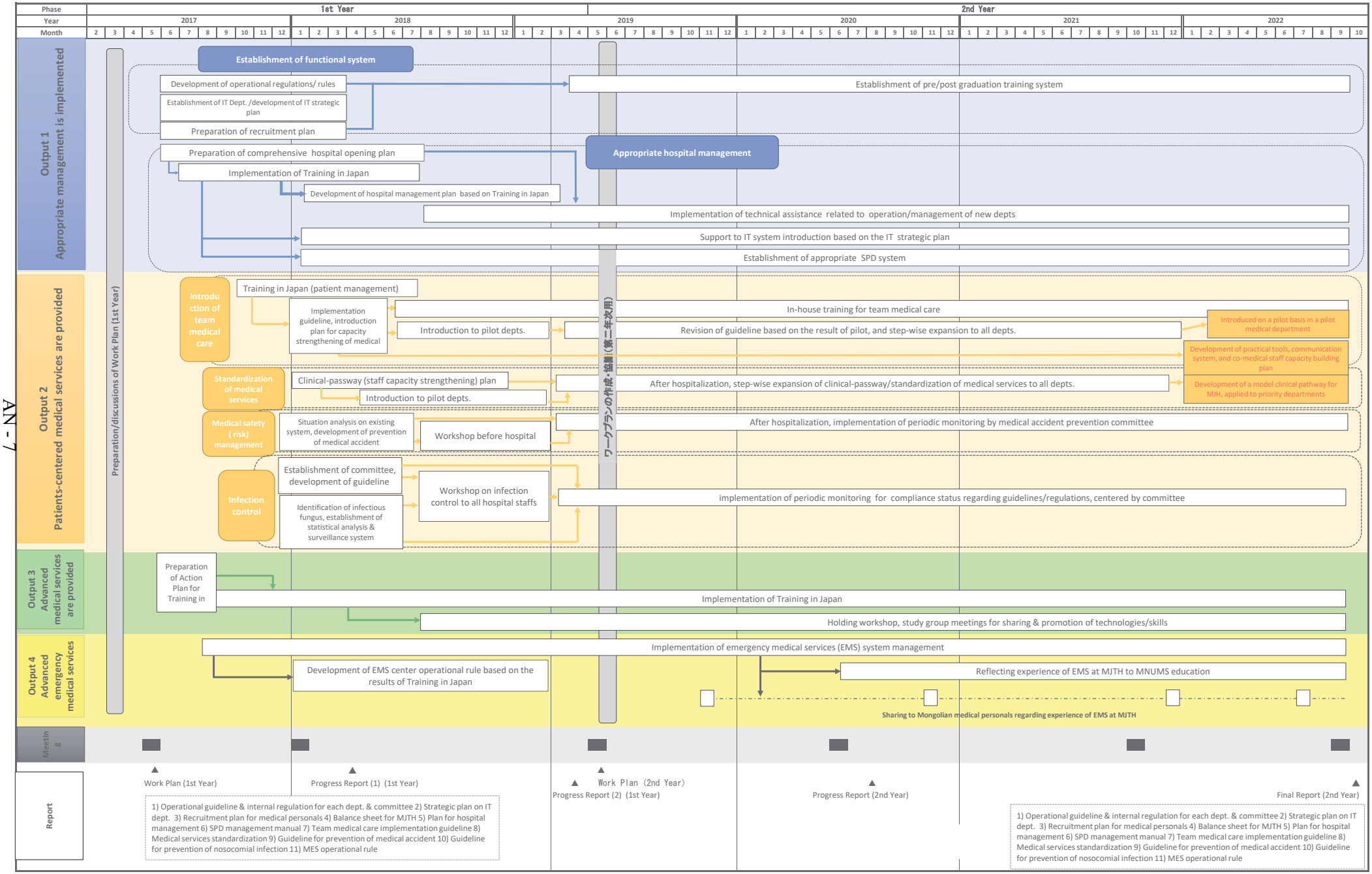
Work Schedule

Phase	Second Year			
Year	2019	2020	2021	2022
Month	5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10
No. (Phase-based)	28 29 30 31 32 33 34 35	36 37 38 39 40 41 42 43 44 45 46 47	48 49 50 51 52 53 54 55 56 57 58 59	60 61 62 63 64 65 66 67 68 69
No. (for all)	28 29 30 31 32 33 34 35	36 37 38 39 40 41 42 43 44 45 46 47	48 49 50 51 52 53 54 55 56 57 58 59	60 61 62 63 64 65 66 67 68 69

Items
<Second Year: May 2019 - January 2022>
(1) Preparation and discussion of work plan (2nd year)
(2) Activities for Output 1: Appropriate management is implemented in MJTH (Mongolia-Japan Teaching Hospital)
【1-1: Construction of functional organization of MJTH】
1-1-4: To develop post-graduate training systems for medical professionals
【1-2: Sound management of MJTH】
1-2-4: *To provide technical support in bylaws-based practical operation newly established*
1-2-5: *To support the medical informatics division to promote practical (continue from the 1st*
1-2-6: *To develop a physical distribution management system (PDMS) for medicines, medical*
(3) Activities for Output 2 (Patients-centered medical services are provided
【2-1: Introduction of team-approached patient management system】
2-1-1: *To conduct Trainings in Japan for patient management geared to eligible medical*
2-1-3: *To conduct in-hospital trainings for MJTH staff on the team-approached patient*
2-1-5: To phase the team-approached patient management to all clinical departments after the opening of MJTH on the basis of the results of the trial introduction
【2-2: Standardization of medical services】
2-2-3: To phase the standardization of medical services using clinical pathways to all medical departments after the opening of MJTH, on the basis of the results of the trial introduction
【2-3: Risk Management of medical care】
2-3-3: To perform regular monitoring activities at the initiative of the risk management committee
【2-4: Prevention and control of nosocomial infections】
2-4-4: To perform regular monitoring on the comliance with the guidelines and/or regulations at
(4) Activities for Output 3 (Advanced medical services are provided in MJTH)
3-2: *To conduct Training in Japan for eligible medical staff in accordance with the plan*
3-3: *To conduct training debriefings, intra-/inter-department study meetings, etc. for promoting technology sharing (continue from the 1st Year)*
(5) Activities for Output 4 (Advanced emergency medical services (EMS)
4-1: *To conduct trainings of operational management, which include staffing and financial*
4-3: To incorporate findings and experiences of the EMS in MJTH on the lectures in MNUMS
4-4: To widely share the findings and experiences of EMS in MJTH with medical professionals
(6) Preparation of the Project Progress Report
<Activities for all periods>
(1) Holding meetings for information sharing (including Joint Coordinating Committee)

Remarks: Work in Mongolia　Work in Japan　▲——▲ Preparation and Discussion of Reports　■■■■ Continuing Work

Annex 1-5 Flowchart of the Project Implementation



2022 Service performance comparative management form (MJTH)

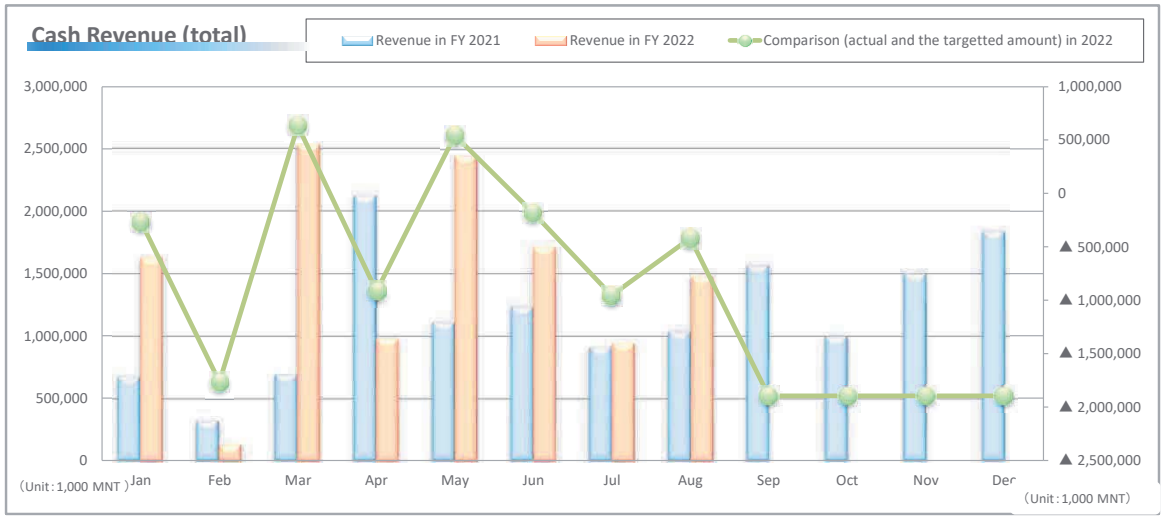
8 Months

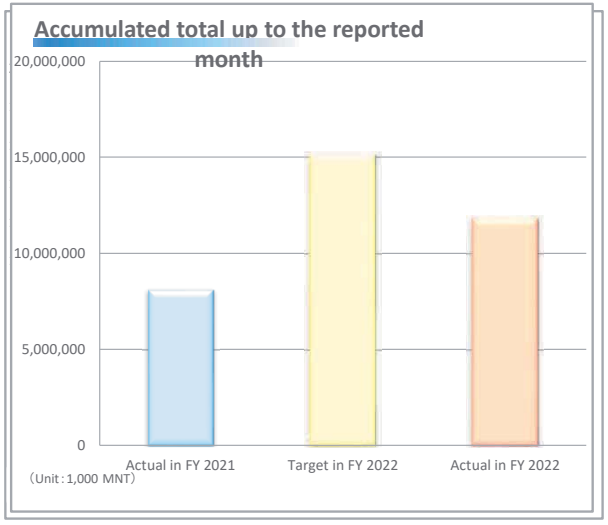
◆Cash Revenue

(Unit : 1,000 MNT)

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total up to thereported month	Annual total
FY 2021	Actual	673,395	317,795	690,847	2,117,008	1,106,436	1,231,065	907,902	1,031,553	1,560,252	994,367	1,494,146	1,832,892	8,076,001	13,957,658
FY 2022	Targetted	1,893,244	1,893,244	1,893,244	1,893,244	1,893,244	1,893,244	1,893,244	1,893,244	1,893,244	1,893,244	1,893,244	1,893,244	15,145,956	22,718,934
	Actual	1,627,139	130,714	2,527,640	976,905	2,435,741	1,710,008	939,596	1,474,377	0	0	0	0	11,822,121	11,822,121
Comparison of actual (two fiscal years		953,744	▲ 187,081	1,836,793	▲ 1,140,102	1,329,306	478,943	31,694	442,824	▲ 1,560,252	▲ 994,367	▲ 1,494,146	▲ 1,832,892	3,746,120	
Comparison with the target (2022)		▲ 266,106	▲ 1,762,530	634,396	▲ 916,339	542,497	▲ 183,237	▲ 953,648	▲ 418,868	▲ 1,893,244	▲ 1,893,244	▲ 1,893,244	▲ 1,893,244	▲ 3,323,835	
Ratio for above comparison (%)		86%	7%	134%	52%	129%	90%	50%	78%	0%	0%	0%	0%	78%	52%

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total up to thereported month	Annual total
FY 2021	Health Insurance	263,620	188,300	536,973	609,158	298,066	918,772	541,639	667,361	1,076,896	346,945	1,066,102	887,388	7,401,220	7,401,220
	Subsidy budget	291,666	0	0	624,517	261,600	212,800	288,000	240,000	350,000	448,720	170,240	612,457	3,500,000	3,500,000
	Own revenue from the patients	104,344	108,761	132,617	45,932	64,020	91,683	70,980	118,382	127,546	192,065	251,993	326,637	1,634,960	1,634,960
	Other revenue	13,766	20,734	21,258	837,400	482,750	7,810	7,283	5,810	5,810	6,638	5,810	6,410	1,421,479	1,421,479
	Total	**673,396**	**317,795**	**690,848**	**2,117,007**	**1,106,436**	**1,231,065**	**907,902**	**1,031,553**	**1,560,252**	**994,368**	**1,494,145**	**1,832,892**	**12,536,180**	**13,957,659**
FY 2022	Health Insurance	1,204,351	0	2,347,702	640,241	1,188,134	1,521,079	575,361	766,688	0	0	0	0	8,243,556	8,243,556
	Subsidy budget	256,740	0	0	0	976,740	0	240,000	480,000	0	0	0	0	1,953,480	1,953,480
	Own revenue from the p	160,238	124,904	173,978	327,045	263,721	183,234	116,615	219,595	0	0	0	0	1,569,330	1,569,330
	Other revenue	5,810	5,810	5,960	9,620	7,147	5,695	7,620	8,094	0	0	0	0	55,756	55,756
	Total	1,627,139	130,714	2,527,640	976,906	2,435,742	1,710,008	939,596	1,474,377	0	0	0	0	11,822,122	11,822,122
Gaps	Health Insurance	940,731	−188,300	1,810,729	31,083	890,068	602,307	33,722	99,327	−1,076,896	−346,945	−1,066,102	−887,388	842,336	842,336
	Subsidy budget	−34,926	0	0	−624,517	715,140	−212,800	−48,000	240,000	−350,000	−448,720	−170,240	−612,457	−1,546,520	−1,546,520
	Own revenue from the p	55,894	16,143	41,361	281,113	199,701	91,551	45,635	101,213	−127,546	−192,065	−251,993	−326,637	−65,630	−65,630
	Other revenue	−7,956	−14,924	−15,298	−827,780	−475,603	−2,115	337	2,284	−5,810	−6,638	−5,810	−6,410	−1,365,723	−1,365,723
	Total	953,743	−187,081	1,836,792	−1,140,101	1,329,306	478,943	31,694	442,824	−1,560,252	−994,368	−1,494,145	−1,832,892	−2,135,537	−2,135,537





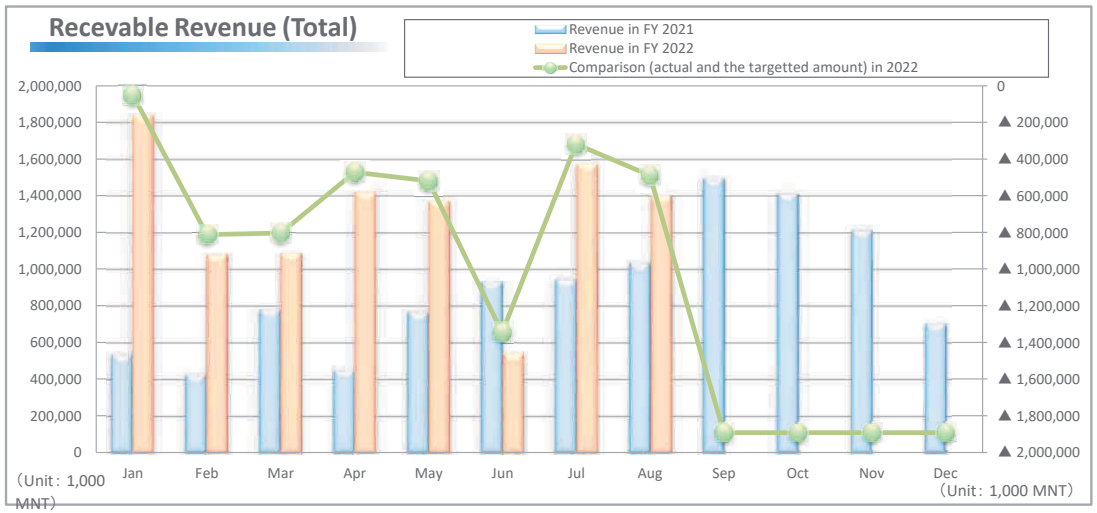
Actual in FY 2021
Target in FY 2022
Actual in FY 2022

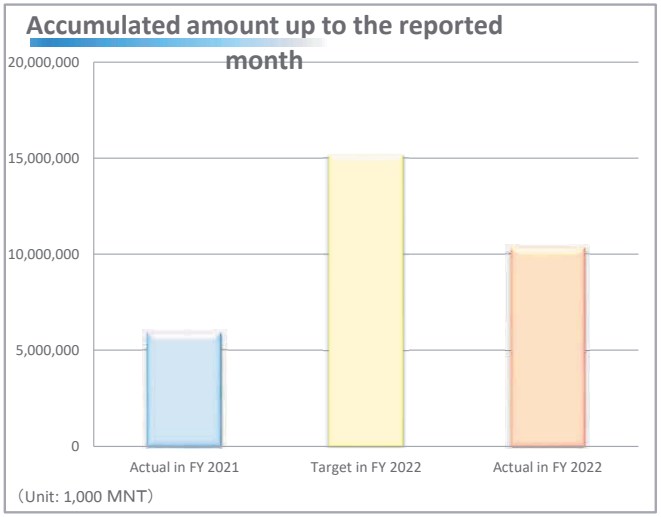
◆Receivable Revenue

(Unit : 1,000 MNT)

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total up to thereported month	Annual total
FY 2021	Actual	536,640	428,031	783,075	450,619	768,254	932,589	945,586	1,036,479	1,495,072	1,412,168	1,211,412	706,364	5,881,273	10,706,289
FY 2022	Targetted	1,893,244	1,893,244	1,893,244	1,893,244	1,893,244	1,893,244	1,893,244	1,893,244	1,893,244	1,893,244	1,893,244	1,893,244	15,145,956	22,718,934
	Actual	1,842,812	1,080,518	1,089,000	1,421,404	1,374,744	545,857	1,575,519	1,403,199	0	0	0	0	10,333,053	10,333,053
Comparison of actual (two fiscal years)		1,306,172	652,487	305,925	970,785	606,490	▲ 386,732	629,933	366,720	▲ 1,495,072	▲ 1,412,168	▲ 1,211,412	▲ 706,364	4,451,779	
Comparison with the target (2022)		▲ 50,432	▲ 812,726	▲ 804,245	▲ 471,841	▲ 518,500	▲ 1,347,388	▲ 317,725	▲ 490,046	▲ 1,893,244	▲ 1,893,244	▲ 1,893,244	▲ 1,893,244	▲ 4,812,903	
Ratio for above comparison (%)		97%	57%	58%	75%	73%	29%	83%	74%	0%	0%	0%	0%	68%	45%

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total up to thereported month	Annual total
FY 2021	Health Insurance	418,191	298,536	629,200	398,302	695,670	835,715	867,323	912,287	1,361,715	1,213,465	953,609	373,318	8,957,331	8,957,330
	Own revenue from the patie	104,683	108,761	132,617	45,932	64,020	89,064	70,980	118,382	127,546	192,065	251,993	326,637	1,632,680	1,632,681
	Other revenue	13,766	20,734	21,258	6,385	8,565	7,810	7,283	5,810	5,810	6,638	5,810	6,410	116,279	116,278
	Total	**536,640**	**428,031**	**783,075**	**450,619**	**768,255**	**932,589**	**945,586**	**1,036,479**	**1,495,071**	**1,412,168**	**1,211,412**	**706,365**	**10,706,290**	**10,706,289**
FY 2022	Health Insurance	1,676,764	949,804	909,062	1,084,739	1,103,877	356,928	1,451,284	1,175,510	0	0	0	0	8,707,968	8,707,968
	Own revenue from the patie	160,238	124,904	173,978	327,045	263,721	183,234	116,615	219,595	0	0	0	0	1,569,330	1,569,330
	Other revenue	5,810	5,810	5,960	9,620	7,147	5,695	7,620	8,094	0	0	0	0	55,756	55,755
	Total	**1,842,812**	**1,080,518**	**1,089,000**	**1,421,404**	**1,374,745**	**545,857**	**1,575,519**	**1,403,199**	**0**	**0**	**0**	**0**	**10,333,054**	**10,333,053**
Gaps	Health Insurance	1,258,573	651,268	279,862	686,437	408,207	-478,787	583,961	263,223	-1,361,715	-1,213,465	-953,609	-373,318	-249,363	-249,362
	Own revenue from the patie	55,555	16,143	41,361	281,113	199,701	94,170	45,635	101,213	-127,546	-192,065	-251,993	-326,637	-63,350	-63,351
	Other revenue	-7,956	-14,924	-15,298	3,235	-1,418	-2,115	337	2,284	-5,810	-6,638	-5,810	-6,410	-60,523	-60,523
	Total	1,306,172	652,487	305,925	970,785	606,490	-386,732	629,933	366,720	-1,495,071	-1,412,168	-1,211,412	-706,365	-373,236	-373,236





Actual in FY 2021
Target in FY 2022
Actual in FY 2022

◆[Inpatient]Receivable Revenue, the Unit price for services, total patients, and Operating beds ratio for medical departments

【Receivable Revenue】

(Unit:1,000 MNT)

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total up to the reported month	Annual total
FY 2021	Actual	100,158	72,148	324,652	74,404	483,880	566,110	608,370	603,268	942,819	961,374	674,106	497,445	2,832,990	5,908,734
FY 2022	Actual	1,052,115	639,042	454,343	559,713	674,233	218,443	908,626	782,240	0	0	0	0	5,288,755	5,288,755
Comparison with the previous FY		951,957	566,894	129,692	485,309	190,353	▲ 347,667	300,256	178,972	▲ 942,819	▲ 961,374	▲ 674,106	▲ 497,445	2,455,765	

【Unit price per service】

(Unit: MNT)

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total up to the reported month	Annual total
FY 2021	Actual	61,518	55,485	90,394	38,935	119,915	122,455	141,745	284,829	273,852	319,563	216,094	231,478	120,557	167,772
FY 2022	Actual	275,907	297,905	287,924	231,124	289,209	97,571	470,803	333,268					281,237	281,237
Comparison with the previous FY		214,389	242,420	197,530	192,189	169,294	▲ 24,884	329,058	48,439					160,680	
Comparison with the target		200,408	222,406	212,425	155,625	213,710	22,072	395,304	257,769					205,738	

【Cumulative total of patients】

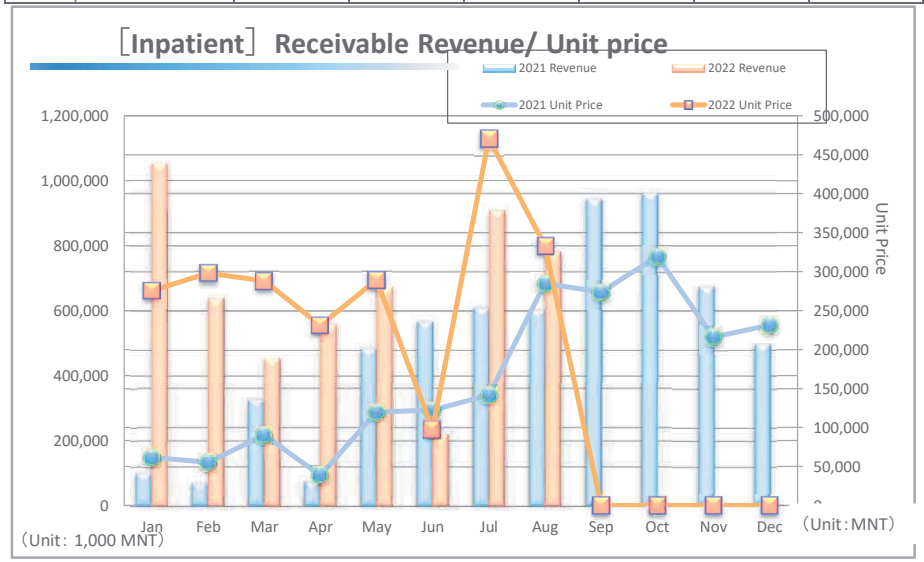
(Unit:: Number of people)

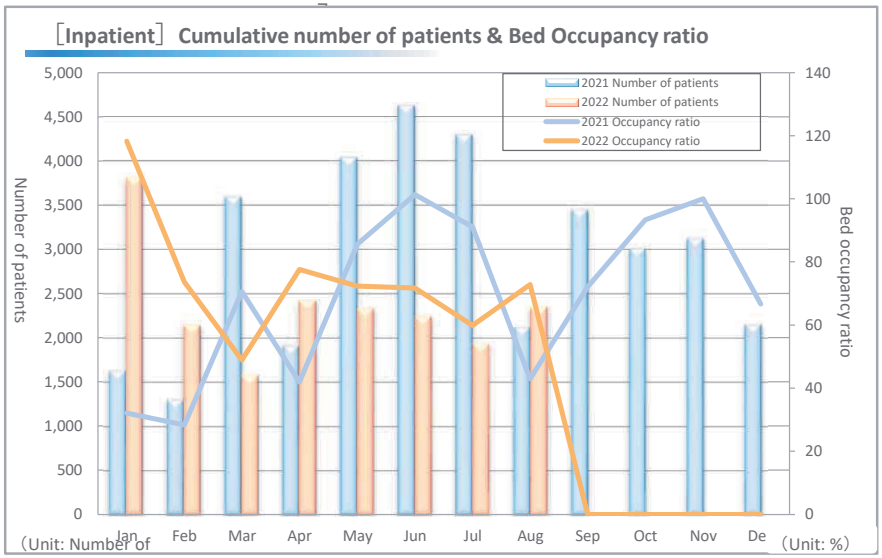
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total up to the reported month	Annual total
FY 2021	Actual	1,628	1,300	3,592	1,911	4,035	4,623	4,292	2,118	3,443	3,008	3,120	2,149	23,499	35,219
FY 2022	Actual	3,813	2,145	1,578	2,422	2,331	2,239	1,930	2,347					18,805	18,805
Comparison with the previous FY		2,185	845	▲ 2,014	511	▲ 1,704	▲ 2,384	▲ 2,362	229					▲ 4,694	

【Bed occupation ratio】

(Unit: %)

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total up to the reported month	Annual total
FY 2021	Actual	32.02	28.32	70.64	41.91	85.64	101.38	91.09	42.97	72.18	93.31	99.98	66.66	61.46	61.46
FY 2022	Actual	118.28	73.66	48.95	77.62	72.31	71.76	59.86	72.80					74.41	74.41
Comparison with the previous FY		86.26	45.34	▲ 21.69	35.71	▲ 13.33	▲ 29.62	▲ 31.23	29.83					12.95	





◆[Outpatient]Receivable Revenue, the Unit price for services, total patients, and average number of patients for medical departments

【Receivable Revenue】

(Unit:1,000 MNT)

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total up to the reported month	Annual total
FY 2021	Actual	422,716	347,480	264,949	289,934	318,109	358,669	329,933	427,336	546,443	444,156	531,496	507,894	2,759,125	4,789,113
FY 2022	Actual	784,887	435,666	628,697	852,071	693,365	321,719	659,273	612,866	0	0	0	0	4,988,542	4,988,542
Comparison with the previous FY		362,170	88,186	363,748	562,137	375,255	▲ 36,950	329,340	185,530	▲ 546,443	▲ 444,156	▲ 531,496	▲ 507,894	2,229,417	

【Unit price per service】

(Unit: MNT)

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total up to the reported month	Annual total
FY 2021	Actual	76,344	46,529	41,077	48,298	49,281	65,059	56,993	59,518	63,614	46,132	61,989	52,349	54,750	55,118
FY 2022	Actual	82,881	52,251	55,800	77,320	63,576	31,718	89,454	57,883					63,065	63,065
Comparison with the previous FY		6,537	5,722	14,723	29,022	14,295	▲ 33,341	32,461	▲ 1,635					8,315	
Comparison with the target		63,475	32,845	36,394	57,914	44,170	12,312	70,048	38,477					43,659	

【Cumulative total of patients】

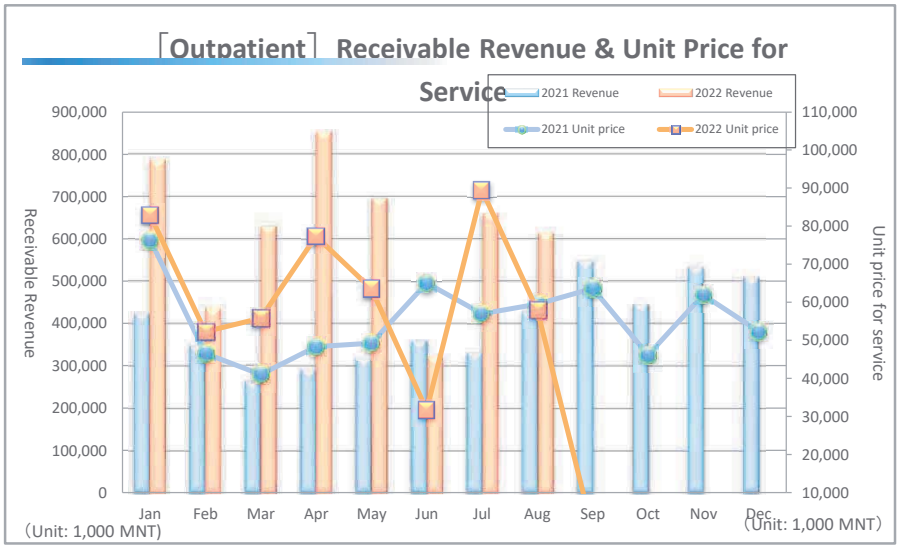
(Unit:: Number of people)

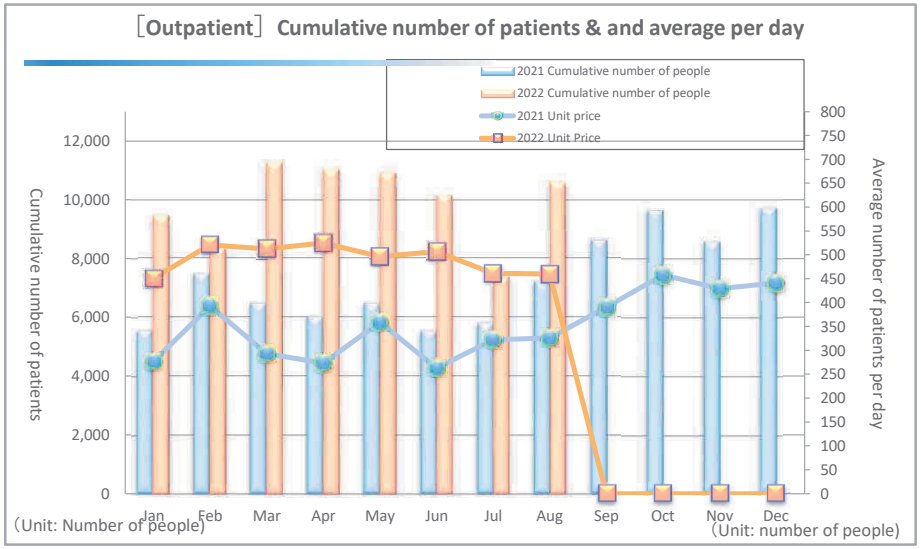
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total up to the reported month	Annual total
FY 2021	Actual	5,537	7,468	6,450	6,003	6,455	5,513	5,789	7,180	8,590	9,628	8,574	9,702	50,395	86,889
FY 2022	Actual	9,470	8,338	11,267	11,020	10,906	10,143	7,370	10,588					79,102	79,102
Comparison with the previous FY		3,933	870	4,817	5,017	4,451	4,630	1,581	3,408					28,707	

【Average number of patient per day】

(Unit:: Number of people)

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total up to the reported month	Annual total
FY 2021	Actual	277	393	293	273	359	263	322	326	390	458	429	441	311	352
FY 2022	Actual	451	521	512	525	496	507	461	460					491	491
Comparison with the previous FY		174	128	219	252	137	244	139	134					180	





◆Number of new patient

【Inpatient】

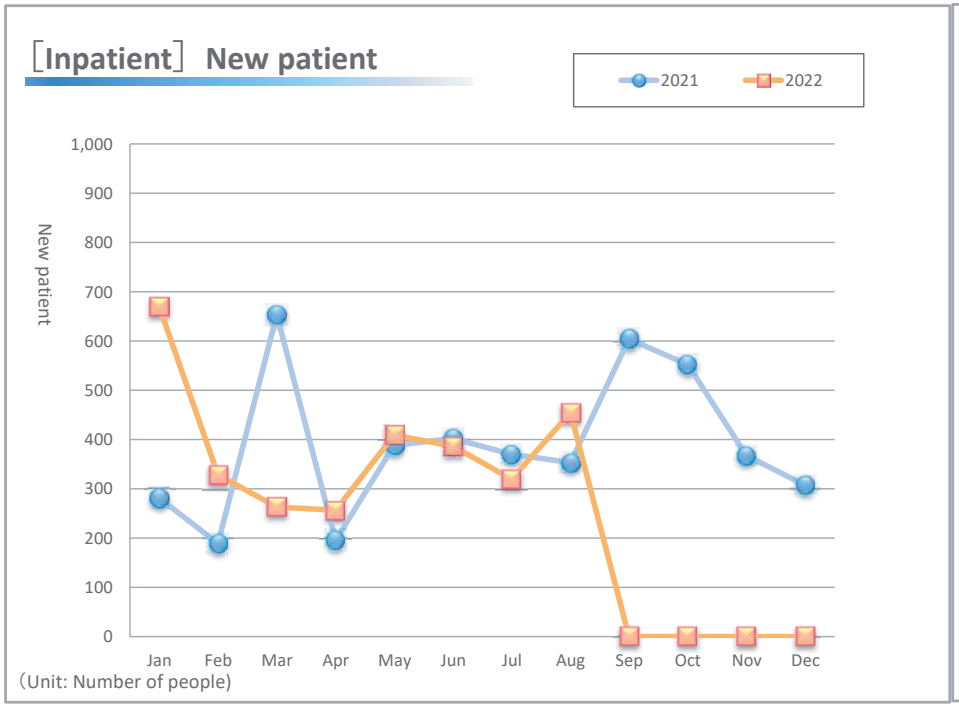
(Unit:: Number of people)

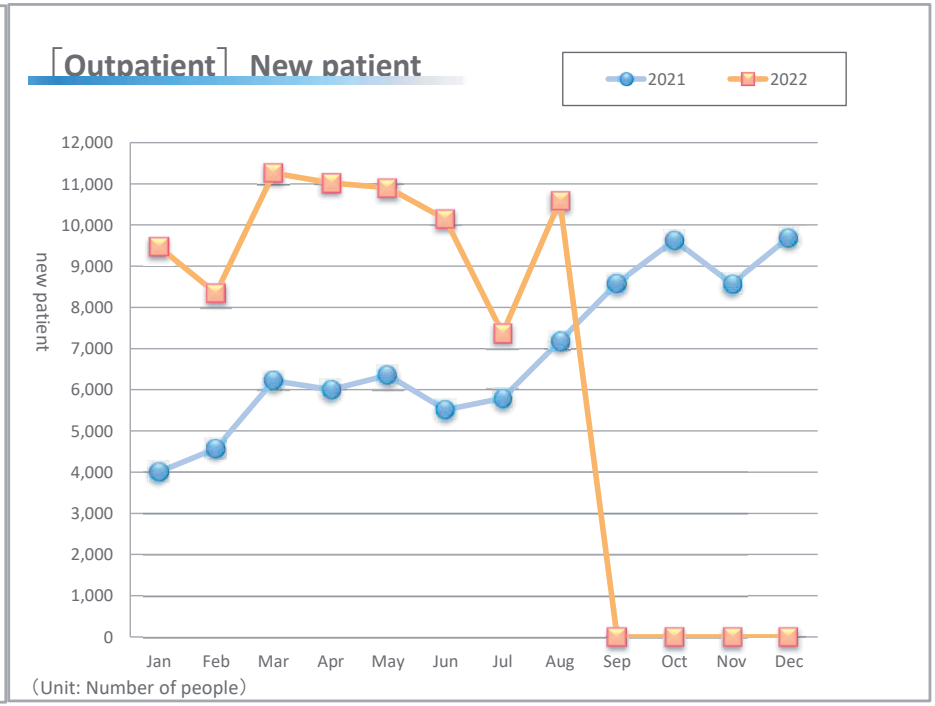
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total up to ther eported month	Annual total
FY 2021	Actual	281	189	653	195	388	402	370	353	604	552	367	307	2,831	4,661
FY 2022	Actual	669	328	263	256	409	386	319	454					3,084	3,084
Comparison with the previous FY		388	139	▲ 390	61	21	▲ 16	▲ 51	101					253	

【Outpatient】

(Unit:: Number of people)

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total up to the reported month	Annual total
FY 2021	Actual	4,007	4,577	6,220	6,003	6,351	5,513	5,789	7,180	8,590	9,628	8,574	9,702	45,640	82,134
FY 2022	Actual	9,470	8,338	11,267	11,020	10,906	10,143	7,370	10,588					79,102	79,102
Comparison with the previous FY		5,463	3,761	5,047	5,017	4,555	4,630	1,581	3,408					33,462	



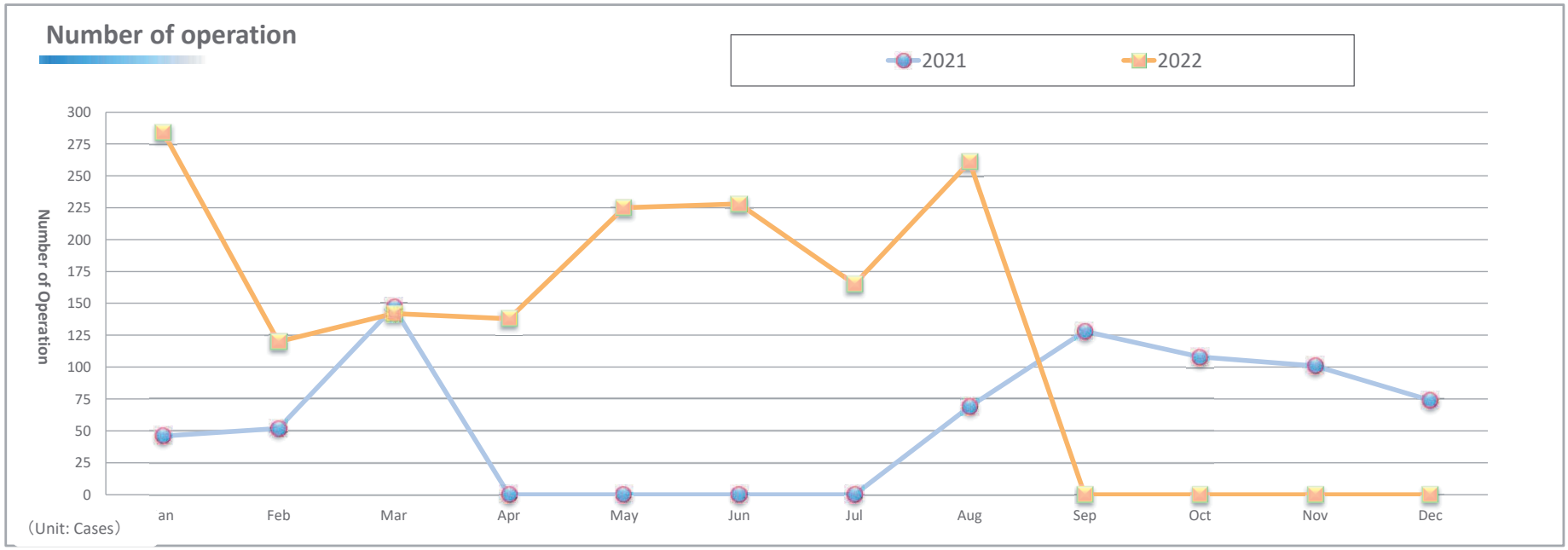


◆Number of operation

【Medical departments】

(Unit:: Number of cases)

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total up to the reported	Annual total
FY 2021	Actual	46	52	147					69	128	108	101	74	314	725
FY 2022	Actual	284	120	142	138	225	228	165	261					1,563	1,563
Comparison with the previous FY		238	68	▲ 5					192					1,249	



◆Number of operation for each medical department

(Unit: Cases)

	jan			Feb			Mar			Apr			May			Jun			Jul			Aug			Sep			Oct			Nov			Dec			Total		
	2021	2022	Gap	2021	2022	Gap	2021	2022	Gap	2021	2022	Gap	2021	2022	Gap	2021	2022	Gap	2021	2022	Gap	2021	2022	Gap	2021	2022	Gap	2021	2022	Gap	2021	2022	Gap	2021	2022	Gap	2021	2022	2022-2021
Medical Departments	46	273	227	52	0	-52	147	0	-147	0	213	213	0	225	225	0	228	228	0	165	165	69	261	192	128	0	-128	108	0	-108	101	0	-101	74	0	-74	725	1,365	640
Traditional medicine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Surgery	36	166	130	28	0	-28	105	0	-105	0	122	122	0	95	95	0	112	112	0	106	106	55	135	80	52	0	-52	61	0	-61	64	0	-64	50	0	-50	451	736	285
Internal medicine	0	0	0	0	0	0	0	0	0	0	0	0	0	55	55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	55	55
Injury (Surgery)	3	51	48	11	0	-11	10	0	-10	0	26	26	0	0	0	0	32	32	0	8	8	8	51	43	29	0	-29	21	0	-21	16	0	-16	10	0	-10	108	168	60
otolaryngology department	7	56	49	13	0	-13	32	0	-32	0	65	65	0	56	56	0	57	57	0	43	43	6	64	58	43	0	-43	23	0	-23	21	0	-21	14	0	-14	159	341	182
Neurology department	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pediatrics	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gynecology	0	0	0	0	0	0	0	0	0	0	0	0	0	19	19	0	27	27	0	8	8	0	11	11	4	0	-4	3	0	-3	0	0	0	0	0	0	7	65	58

◆Cumulative revenue for each medical department in comparison

(Unit: MNT)

Inpatient								Medical deparments
2021: Jan- 8 Months			2022: Jan- 8 Months			The revenue gap between FYs	Comparison (%)	
Patients (A)	Receivable Revenue (B)	Unit price (C=B/A)	Patients (D)	Receivable Revenue (E)	Unit price (F=E/D)	(G=E-B)	(H=G/B)	
525	198,609,623	378,304	0	0		▲ 198,609,623	-100.0%	Traditional medicine
254	264,736,817	1,042,271	1,132	2,705,863,725	2,390,339	2,441,126,908	922.1%	Surgery
207	135,325,746	653,748	1,099	1,566,624,647	1,425,500	1,431,298,901	1057.7%	Internal medicine
24	24,766,362	1,031,932	172	0	0	▲ 24,766,362	-100.0%	Injury (Surgery)
63	37,326,353	592,482	278	0	0	▲ 37,326,353	-100.0%	Otolaryngology department
65	22,340,974	343,707	142	0	0	▲ 22,340,974	-100.0%	Neurology department
47	21,776,727	463,335	34	0	0	▲ 21,776,727	-100.0%	Pediatrics
44	12,212,040	277,546	46	0	0	▲ 12,212,040	-100.0%	Gynecology
0	35,145,000		106	419,756,600	3,959,968	384,611,600	1094.4%	Emergency
0	2,080,750,000		206	596,510,000	2,895,680	▲ 1,484,240,000	-71.3%	COVID-19
1,229	2,832,989,642	2,305,118	3,215	5,288,754,972	1,645,025	2,455,765,330	86.7%	

Medical deparments	Outpatient							
	2021: Jan- 8 Months			2022: Jan- 8 Months			The revenue gap between FYs	Comparison (%)
	Patients (I)	Receivable Revenue (J)	Unit price (K=J/I)	Patients (L)	Receivable Revenue (M)	Unit price (N=M/L)	(O=M-J)	(P=O/J)
Traditional medicine	1,029	49,222,585	47,835	0	0		▲ 49,222,585	-100.0%
Surgery	4,782	702,155,971	146,833	4,686	1,718,420,920	366,714	1,016,264,949	144.7%
Internal medicine	3,251	21,911,000	6,740	5,658	1,423,530,987	251,596	1,401,619,987	6396.9%
Injury (Surgery)	906	6,093,000	6,725	3,688	0	0	▲ 6,093,000	-100.0%
Otolaryngology department	3,396	20,372,000	5,999	5,725	0	0	▲ 20,372,000	-100.0%
Neurology department	2,615	19,945,000	7,627	7,026	0	0	▲ 19,945,000	-100.0%
Pediatrics	2,522	9,118,000	3,615	7,735	0	0	▲ 9,118,000	-100.0%
Gynecology	2,832	22,208,000	7,842	5,227	0	0	▲ 22,208,000	-100.0%
Cardiology	2,718	15,754,000	5,796	6,005	0	0	▲ 15,754,000	-100.0%
Ophthalmology	2,237	12,995,000	5,809	4,258	0	0	▲ 12,995,000	-100.0%
Endocrine	1,788	8,565,000	4,790	2,925	0	0	▲ 8,565,000	-100.00%
Kidney	1,045	6,834,000	6,540	2,857	0	0	▲ 6,834,000	-100.0%
Apparatus	2,672	12,555,000	4,699	6,762	0	0	▲ 12,555,000	-100.0%
Rheumatic	1,246	8,885,000	7,131	5,678	0	0	▲ 8,885,000	-100.0%
Lung	1,368	3,795,000	2,774	4,405	0	0	▲ 3,795,000	-100.0%
Physiotherapy	517	2,055,000	3,975	1,127	0	0	▲ 2,055,000	-100.0%
Dermatology	233	2,089,000	8,966	829	0	0	▲ 2,089,000	-100.0%
Urology	303	2,581,000	8,518	724	0	0	▲ 2,581,000	-100.0%
Blood	236	945,000	4,004	631	0	0	▲ 945,000	-100.0%
Mental	76	607,000	7,987	215	0	0	▲ 607,000	-100.0%
Neoplasm	157	684,000	4,357	588	0	0	▲ 684,000	-100.0%
Turberculous	0	0		0	0		0	
Pain relief	0	0		0	0		0	
Sexual transmission	0	0		0	0		0	
Anesthesia	120	2,010,000	16,750	1,591	0	0	▲ 2,010,000	-100.0%
Genetics	3	15,000	5,000	0	0		▲ 15,000	-100.0%
Neurological surgery	109	264,000	2,422	25	0	0	▲ 264,000	-100.0%
Laboratory	4,778	510,192,517	106,780	0	0		▲ 510,192,517	-100.0%
Diagnostic	3,332	892,496,702	267,856	1,007	1,447,015,400	1,436,957	554,518,698	62.1%
Treatment	0	25,295,438		0	0		▲ 25,295,438	-100.0%
Medical attendance	0	0		0	0		0	
Endoscope	2	80,965,366	40,482,683	0	0		▲ 80,965,366	-100.0%
Packaged physical examinatior	2,226	60,266,999	27,074	0	0		▲ 60,266,999	-100.0%
Health support center	46,499	2,500,875,578	53,783	0	145,799,100		▲ 2,355,076,478	-94.2%
DAY CARE	0	0		0	253,775,622		253,775,622	
Total	92,998	5,001,751,156	53,783	79,372	4,988,542,029	62,850	▲ 13,209,127	-0.3%

◆Revenue for each medical department in comparison

(Unit: MNT)

Inpatient								
2021: Jan- 8 Months			2022: Jan- 8 Months			The revenue gap between FYs	Comparison (%)	Medical deparments
Patients (A)	Receivable Revenue (B)	Unit price (C=B/A)	Patients (D)	Receivable Revenue (E)	Unit price (F=E/D)	(G=E-B)	(H=G/B)	
41	20,060,935	489,291	0	0		-20,060,935	-100.0%	Traditional medicine
69	103,252,971	1,496,420	135	426,050,250	3,155,928	322,797,279	312.6%	Surgery
53	49,129,130	926,965	193	267,797,400	1,387,551	218,668,270	445.1%	Internal medicine
0	0		51	0	0	0		Injury (Surgery)
7	0	0	64	0	0	0		Otolaryngology department
0	0		0	0		0		Neurology department
0	0		0	0		0		Pediatrics
0	0		11	0	0	0		Gynecology
18	3,255,000		0	88,392,000		85,137,000	2615.6%	Emergency
165	427,570,000		0	0		-427,570,000	-100.0%	COVID-19
353	603,268,036	1,708,975	454	782,239,650	1,722,995	178,971,614	29.7%	

Outpatient							
2021: Jan- 8 Months			2022: Jan- 8 Months			The revenue gap between FYs	Comparison (%)
Patients (I)	Receivable Revenue (J)	Unit price (K=J/I)	Patients (L)	Receivable Revenue (M)	Unit price (N=M/L)	(O=M-J)	(P=O/J)
39	10,702,330	274,419	0	0		▲ 10,702,330	-100.0%
528	172,496,370	326,698	653	233,308,320	357,287	60,811,950	35.3%
663	0	0	555	216,450,089	390,000	216,450,089	
137	0	0	605	0	0	0	
907	0	0	913	0	0	0	
51	0	0	1,019	0	0	0	
734	0	0	1,103	0	0	0	
713	0	0	640	0	0	0	
586	0	0	768	0	0	0	
556	0	0	652	0	0	0	
335	0	0	576	0	0	0	
261	0	0	384	0	0	0	
730	0	0	995	0	0	0	
256	0	0	723	0	0	0	
334	0	0	334	0	0	0	
109	0	0	173	0	0	0	
0	0		90	0	0	0	
53	0	0	153	0	0	0	
55	0	0	47	0	0	0	
16	0	0	30	0	0	0	
35	0	0	106	0	0	0	
0	0		0	0		0	
0	0		0	0		0	
0	0		0	0		0	
63	0	0	69	0	0	0	
0	0		0	0		0	
19	0	0	0	0		0	
0	17,502,600		0	0		▲ 17,502,600	-100.0%
0	167,720,599		0	122,365,300		▲ 45,355,299	-27.0%
0	0		0	0		0	
0	0		0	0		0	
0	17,417,500		0	0		▲ 17,417,500	-100.0%
0	17,820,000		0	0		▲ 17,820,000	-100.0%
7,180	427,335,699	59,518	0	3,145,000		▲ 424,190,699	-99.3%
0	0		0	37,597,000		37,597,000	
14,360	830,995,098	57,869	10,588	612,865,709	57,883	▲ 218,129,389	-26.2%

Medical deparments
Traditional medicine
Surgery
Internal medicine
Injury (Surgery)
Otolaryngology department
Neurology department
Pediatrics
Gynecology
Cardiology
Ophthalmology
Endocrine
Kidney
Apparatus
Rheumatic
Lung
Physiotherapy
Dermatology
Urology
Blood
Mental
Neoplasm
Turberculous
Pain relief
Sexual transmission
Anesthesia
Genetics
Neurological surgery
Laboratory
Diagnostic
Treatment
Medical attendance
Endoscope
Packaged physical examination
Health support center
DAY CARE
Total

Annex 1-7 Hiyari-Hatto and Incident Form

Incident Countermeasure Implementation Record

When an incident occurs, the department should review the factors and countermeasures after obtaining an overview in the incident report and record them below.

Date of consideration :	**Department name**
Incident Type:	**Incident No:**
Participants	
Date and time of the incident:	
Incident Outline	
Incident Details	
Factors (multiple choice)	☐There were no manuals or regulations. (Check, if there is no manual or regulation and this was a factor in this incident) ☐Manuals and regulations were not adequate. (Check, if there were manuals or regulations, but the content was not appropriate and this was a factor in this incident.) ☐The manual was not in compliance. (Check, if manuals and regulations were in existence and their contents were appropriate, but they were not in compliance, and this was the cause of the incident) ☐ No educational system had been established. ☐ There were problems with workplace practices. ☐There was no communication. ☐There was an assumption. ☐ There were problems with working hours and working conditions. ☐There were problems with the scope of work and the number of tasks. ☐There were problems with medical equipment, instruments, facilities, and the building structure of the facility. ☐ There were problems with the physical environment (lighting, noise, air conditioning, etc.)。 ☐Others
Countermeasures (provide specific and detailed measures that can and will be implemented for the selected factor(s))	
Notification of Absenteeism **(If you were unable to attend the Review Day, please review the above information and sign if you have no objections. If you have any objections, please notify the person in charge of your department):**	
※Please contact the Risk Management Department when the above information has been provided. **risk.hosp@mnums.edu.mn**	

Status of implementation of countermeasures	Acceptable	Not Acceptable	Pending	N/A
Status of management of newly developed/revised manuals, procedures, etc.	☐	☐	☐	☐
Revision of regulations and instructions	☐	☐	☐	☐
Status of notification to staffs	☐	☐	☐	☐
Status of implementation for staffs	☐	☐	☐	☐
Occurrence of the same incident	Yea☐	No☐		
New defects (risks)	Yes☐	No☐		
Evaluation				
Date of confirmation by Risk Management Dept.				
Evaluator (Risk Management Department, Acting General Manager)				

Annex 2 List of Products (Reports, Manuals, handbooks, etc.

No.	Name of Product
1	Provision for Conducting Training in the Radiation Center's Rooms, Machinery, and Equipment
2	Nursing Department Report 2019 (1)
3	Nursing Department Report 2019 (2)
4	Budget Replanning 9,9 (20200130)
5	Water Leakage Prevention Plan
5	20200212_MJH Financial status report
6	2019 Calculation Comparison Table
7	20200211 Endoscopy Center Feasible Diagnosis and Treatment
8	2020 Budget
9	Regulations for Residents Training at the MJH of MNUMS
10	Round Schedule
11	Cleaning Evaluation Sheet
12	Round Check Sheet
13	Nursing Department 2020 Plan
14	17.9 billion MNT Budget Plan
15	Regulations regarding the Activities of the Human Resources Development Department
16	2019 Financial Statement
17	2.3 billion MNT Investment Budget List
18	Regulations of Medical University Hospital, Organizational Structure (Draft)_20200324
19	Surgical Schedule 20200327
20	Medical University Hospital Concession
21	Mongolian National Registration Certificate Plan
22	Medical University Hospital Regulations, Organizational Structure_20200402
23	2.3 Billion MNT List Description
24	12.8 Billion MNT Investment Budget List
25	12.8 Billion MNT Investment Budget List 20200425
26	List of Investment Budget of 143-12.8 Billion MNT
27	Procedures for Responding to Suspected New Coronavirus Infection
28	Flow 1) Emergency Department Response to be taken for Ward Patients with Suspected
29	Flow 2: Suspected Outpatient Ward Patien
30	(Flow 3) Wards Dealing with suspected ward patients
31	Regulations concerning Determination of Medical Fees (1)
32	Regulations concerning Determination of Medical Fees (2)
33	Organization Chart 20200525
34	News Notebook (ICU)
35	Bed Map
36	Nursing Care Regulation
37	Surgery Application Form
38	Control Sheet for Nurses to Sign Off On
39	Day Shift Nurse Work Role
40	Night Shift Nurse Work Role
41	Sheet for Nurses to Assess Patient Status
42	Nursing Department Report
43	Report on Nursing Quality
44	Nursing Department Plan 2022
45	SPD Report
46	Infection Control and Management Manual
47	Manual on Quality and Safety of Medical Services
48	Instruction for Infection Control (Prevention) with Ventilator
49	Instruction for the Prevention (Prophylaxis) of Kidney and Urinary Tract Infections Caused by Bladder Catheters (1)
50	Instruction for the Prevention (Prophylaxis) of Kidney and Urinary Tract Infections Caused by Bladder Catheters (2)
51	Instruction for Infection Control (Prevention) by Surgical Wound
52	Standard Operating Procedure for Infection Control and Management Department
53	Work Instruction for the Central Sterilization Department
54	Laundry Unit Work Instruction
55	Rule for Coordination of Activities of the Subcommittee on In-Hospital Lifesaving Procedures
56	Lifesaving Regulation CODE BLUE

No.	Name of Product
57	Emergency Medical Treatment Regulation
58	Early Warning Score Rule
59	Interhospital Patient Transport Regulation
60	Rule of Conduct for Emergency Response Team
61	Rule for Transferring and Transporting
62	Clinical Pathways
63	Infection Control and Management, Patient Safety

Annex 3 PDM (All Version of PDM)

(1) PDM Version 1

Date: 23 September 2016

Project Period: Five (5) years from February 2017

Project Title: The Project for Establishment of Hospital Management and Medical Services at the Mongolia-Japan Teaching Hospital

Counterpart Organization: the Ministry of Education, Culture, Science and Sports Mongolia

Implementing Agency: the Mongolia-Japan Teaching Hospital (MJTH)

Project Site: MJTH and Ulaanbaartar City, Mongolia

Target Groups:

Direct beneficiaries: the Mongolia National University of Medical Sciences (MNUMS), and MJTH

Indirect beneficiaries: General population of Ulaanbaatar City

Narrative Summary		Objectively Verifiable Indicators (OVIs)	Means of Verification	Important Assumptions	Achievement	Remarks
Overall Goal						
MJTH is functioned as a general/teaching hospital at a high level.	1	MJTH is certified as the ISO 9001 (Quality Management System).	(1) Hopsital reports			
	2	Pre-service and post-graduate trainings are conducted in MJTH.				
Project Purpose						
A comprehensive system is established in MJTH for the provision of advanced and quality medical services.	1	The bed occupancy rate is kept more than 90% during the final year of the Project.	(1) Project Completion Report (2) Monitoring Sheet (3) Hospital Reports	(1) The Mongolian side properly allocates necessary budget and distribute personnel for maintaining and enhancing benefits derived from the Project. (2) Policies and administrative management system of health capital investment don't change significantly in Mongolia.		
	2	Patient satisfaction for medical services is over XX % on average.				
Outputs						
1 Appropriate management is implemented in MJTH.	1-1	All departments in the organogram of MJTH are fully operated at the time of the termination of the Project.	(1) Project Completion Report (2) Monitoring Sheet (3) Hospital Reports	(1) Trained counterparts do not leave their positions so as to affect the outputs of the Project. (2) The Mongolian side properly allocates necessary budget and distribute personnel for the project activities.		
	1-2	The management of MJTH is kept in good shape on a stand-alone basis at the time of the termination of the Project.				
2 Patients-centered medical services are provided in MJTH.	2-1	The team-approached patient management and clinical pathways are inroduced in all clinical departments at the time of the termination of the Project.	(1) Project Completion Report (2) Monitoring Sheet (3) Hospital Reports			
	2-2	Regulations and guidleines for the prevention of medical accidents and for the prevention and control of nosocomial infections are followed in all departments in MJTH at the time of the termination of the Project.				
3 Advanced medical services are provided in MJTH.	3-1	At least in XX areas, new diagnostics and treatment techniques which are acquired through training courses in Japan are introduced at the time of the termination of the Project.	(1) Project Completion Report (2) Monitoring Sheet (3) Hospital Reports			
	3-2	At least XX in-hospital workshops are held in MJTH during the final year of the Project.				

4	**Advanced emergency medical services (EMS) are provided in MJTH.**	4-1 The system to provide major medical services for 24 hours is established at the time of the termination of the Project. 4-2 Findings and experiences of the EMS in MJTH are incorporated into the curriuclum in MNUMS at the time of the termination of the Project.	(1) Project Completion Report (2) Monitoring Sheet (3) Hospital Reports			

Activities	Inputs		Pre-conditions		
1 Appropriate management is implemented in MJTH.	**The Japanese Side**	**The Mongolian Side**	(1) The Mongolian side does not oppose the implementation of the Project (2)MJTH is built.		
1-1 Construction of functional organization of MJTH	1. Dispatch of JICA experts - Chief Advisor/Hospital Management - Project Coordinator/Training Management - Patient Management/Nursing Care - EMS - Other persons with necessary expertise[6] for the project 2. Training in Japan - Hospital Management - Patient Management - EMS - Other necessary training 3. Provision of equipment - Necessary equipment for project activities 4. Overseas Activities Costs - Necessary costs for the project activities	1. Assignment of Counterpart Personnel (1) Project Director (2) Project Manager (3) Other counterpart personnel 2. Facilities, equipment and materials Suitable office space with necessary equipment Supply or replacement of machinary, equipment, instruments, vehicles, tools, spare parts, and any other materials necessary for the Project other than the equipment provided by JICA 3. Local Costs Runnung expenses necessary for the implementation of the Project Mean of transport and travel allowance for the JICA experts for official travel within Mongolia			
1-1-1 To develop bylaws at each clinical department, nursing department, medical service support division, medical affairs and service division, medical engineering (ME) division, health support division and committees.					
1-1-2 To establish a medical informatics division followed by the development of a strategic plan for IT-driven hospital management.					
1-1-3 To develop a detailed recruitment plan for medical professionals (medical doctors, nursing staff and other co-medical staff[2]), administration staff and other support staff.					
1-1-4 To develop pre-service and post-graduate training systems for medical professionals.					
1-2 Sound management of MJTH					
1-2-1 To develop a comprehensive preparation plan for the opening of MJTH, including detailed plans for medical services, bed management and procurement.					
1-2-2 To provide medical professionals, administration and other support staff with Training in Japan for administrative management.					
1-2-3 To develop a hospital management plan (budget/revenue and expenditure management, personnel management, etc.) on the basis of the knowledge and experiences acquired through the Training in Japan.					
1-2-4 To provide technical support in bylaws-based practical operation newly established divisions such as the health support division and the ME division.					
1-2-5 To support the medical informatics division to promote practical introduction of IT system(s) in accordance with the strategic plan.					
1-2-6 To develop a physical distribution management system (PDMS)[5]for medicines, medical materials, consumables and office supplies.					

2	**Patients-centered medical services are provided in MJTH.**						
	2-1 Introduction of team-approached patient management system						
	2-1-1	To conduct Trainings in Japan for patient management (team-approach, standardization of medical services, risk management, etc.) geared to eligible medical professionals.					
	2-1-2	To develop operational guidelines and introduction plan for team-approached patient management as well as capacity development plans geared to co-medical staff, on the basis of the knowledge and experiences acquired through the Training in Japan.					
	2-1-3	To conduct in-hospital trainings for MJTH staff on the team-approached patient management.					
	2-1-4	To introduce the team-approached patient management to several pilot departments in accordance with the guidelines on a trial basis at the MNUMS General Hospital.					
	2-1-5	To phase the team-approached patient management to all clinical departments after the opening of MJTH on the basis of the results of the trial introduction.					
	2-2 Standardization of medical services						
	2-2-1	To develop a plan for the introduction of clinical pathways and staff capacity development, on the basis of the Training in Japan (Activity 2-1-1).					
	2-2-2	To introduce clinical pathways for both patients and medical professionals to several pilot departments in accordance with the guidelines on a trial basis at the MNUMS General Hospital.					
	2-2-3	To phase the standardization of medical services using clinical pathways to all medical departments after the opening of MJTH, on the basis of the results of the trial introduction.					
	2-3 Risk management of medical care						
	2-3-1	To develop regulations[3] for the prevention of medical accidents on the basis of analyses of the incidents and its prevention activities in the MNUMS General Hospital.					
	2-3-2	To conduct a risk management workshop on the basis of the regulations geared to all MJTH staff before the opening of MJTH.					
	2-3-3	To perform regular monitoring activities at the initiative of the risk management committee after the opening of MJTH.					
	2-4 Prevention and control of nosocomial infections						
	2-4-1	To establish a committee for the prevention and control of nosocomial infections followed by the development of guidelines and/or regulations for it.					
	2-4-2	To establish a surveillance system for nosocomial infections such as the identification of causative microorganisms and statistical analyses.					

	2-4-3 To conduct a workshop for the prevention and control of nosocomial infections on the basis of the regulations geared to all MJTH staff before the opening of MJTH.					
	2-4-4 To perform regular monitoring on the compliance with the guidelines and/or regulations at the initiative of the committee.					
3	**Advanced medical services are provided in MJTH.**					
	3-1 To develop a plan of the Training in Japan for other medical technologies than those related to medical practices[5] regarding diagnoses and treatments of diseases.					
	3-2 To conduct Training in Japan for eligible medical staff in accordance with the plan.					
	3-3 To conduct training debriefings, intra-/inter-department study meetings, etc. for promoting technology sharing.					
4	**Advanced emergency medical services (EMS) are provided in MJTH.**					
	4-1 To conduct trainings of operational management, which include staffing and financial management geared to staff members engaged in EMS.					
	4-2 To develop bylaws, which include staffing for the EMS center for providing prompt testing, diagnosis and treatment, on the basis of the knowledge and experiences acquired through the Training in Japan.					
	4-3 To incorporate findings and experiences of the EMS in MJTH on the lectures in MNUMS.					
	4-4 To widely share the findings and experiences of EMS in MJTH with medical professionals in Mongolia through the implementation of conferences, etc.					

1:The number value of theindicator will be fixed at 1st JCC.
2:Nurses, nutritionists, pharmacists and physical therapists, etc.
3:Strengthening existing PDMS, newly development of PDMS within the framework of the currently-developing hospital IT system, introducing a Supply, Processing & Distribution (SPD) system, etc.
4:near-miss reporting, incident reporting, patient identification using bar code, etc.
5:Medical treatment, imaging diagnostics, histo-pathological diagnostics, and other novel diagnostics such as genetic and molecular biological diagnostics
6:Infection Prevention & Control, SPD, IT, ME, etc.

(2) PDM Version 2

Date: 1 October 2021

Project Title: Project for Establishment of Hospital Management and Medical Services at the Mongolia-Japan Teaching Hospital[1] in Mongolia
Project Period: Five (5) years and six (6) months from March 2017
Counterpart Organization: the Ministry of Education and Sceince, Mongolia
Implementing Agency: Mongolia-Japan Hospital (MJH) of the Mongolia National University of Medical Sciences
Project Site: MJH and Ulaanbaatar City, Mongolia
Target Groups
Direct beneficiaries: the Mongolia National University of Medical Sciences (MNUMS), and MJH
Indirect beneficiaries: General population of Ulaanbaatar City

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption	Achievement	Remarks
Overall Goal					
MJTH is functioned as a general/teaching hospital at a high level.	1. MJH is certified as the ISO 9001 (Quality Management System). 2. Pre-service and post-graduate trainings are conducted in MJH.	(1) Hopsital reports	The Mongolian side does not change the policy that MJH aims to provide international-standard medical services as a Japanese-style teaching hospital.		
Project Purpose					
A comprehensive system is established in MJTH for the provision of advanced and quality medical services.	1. The bed occupancy rate is kept more than 80% during the final year of the Project[6]. 2. Patient satisfaction for medical services is over 80% at the time of the termination of the Project.	(1) Project Completion Report (2) Monitoring Sheet (3) Hospital Reports (1) Project Completion Report (2) Monitoring Sheet (3) Hospital Reports (4) Patient satisfaction survey	(1) The Mongolian side properly allocates necessary budget and distribute personnel for maintaining and enhancing benefits derived from the Project. (2) Policies and administrative management system of health capital investment don't change significantly in Mongolia. (3) Newly emerging infectious diseases do not affect the dispatch of JICA experts, operations of MJH and logistics services in Mongolia.		
Outputs					
1. Appropriate management is implemented in MJH.	1-1. An executive committee is formed at MJH, and the committee activities are conducted in accordance with the committee regulations at the time of the termination of the Project. 1-2. MJH is able to proceed hospital management (financial management, physical distribution management, and information management) based on its management policy at the time of the termination of the Project.	(1) Hospital Reports (2) Bylaws and regulations on an executive committee, Minutes of the meetings of the executive committee (1) Management policy and plan of MJH (2) Budget document with monthly schedule and performance/financial analytical report (3) SPD reports (4) Action Plans to respond to Audit reports' recommendations	(1) Trained counterparts do not leave their positions so as to affect the outputs of the Project. (2) The Mongolian side properly allocates necessary budget and distribute personnel for the project activities. (3) Newly emerging infectious diseases do not affect the dispatch of JICA experts, operations of MJH and logistics services in Mongolia.		

2. Patients-centered medical services are provided in MJH.	2-1. Model clinical pathways are developed based on the actual medical performance of prioritized departments and are implemented by multi-professional team at the time of the termination of the Project.	(1) Project Completion Report (2) Monitoring Sheet (3) Hospital Reports (4) Regulations and Guidelines (5) Conference records			
	2-2. Regulations and guidleines for the prevention of medical accidents and for the prevention and control of nosocomial infections are followed in all departments in MJH at the time of the termination of the Project.	(1) Project Completion Report (2) Monitoring Sheet (3) Hospital Reports (4) Incident reports, Hiyari-Hat reports (5) ICT round reports			
3. Advanced medical services are provided in MJH.	3-1. At least in 3 areas (CT, MRI, endoscopy, etc.), new diagnostics and treatment techniques which are acquired through training courses in Japan and Mongolia are introduced at the time of the termination of the Project.	(1) Project Completion Report (2) Monitoring Sheet (3) Hospital Reports			
	3-2. At least three in-hospital workshops are held in MJH during the final year of the Project.	(1) Project Completion Report (2) Monitoring Sheet (3) Hospital Reports			
4. Advanced emergency medical services (EMS) are provided in MJH.	4-1. The system to provide major medical services for 24 hours is established at the time of the termination of the Project.	(1) Project Completion Report (2) Monitoring Sheet (3) Hospital Reports			
	4-2. Findings and experiences of the EMS in MJH are incorporated into the curriuculum in MNUMS at the time of the termination of the Project.	(1) Road map for developing the curriculum (2) Minutes of meetings			

Activities	Inputs		Important Assumption
1-1. Construction of functional organization of MJH	**The Japanese Side**	**The Mongolian Side**	(1) The Mongolian side does not oppose the implementation of the Project. (2)MJH is built. (3) Newly emerging infectious diseases do not affect the dispatch of JICA experts, operations of MJH and logistics services in Mongolia.
1-1-1. To develop bylaws at each clinical department, nursing department, medical service support division, medical affairs and service division, medical engineering (ME) division, health support division and committees.	1. Dispatch of JICA experts - Chief Advisor/Hospital Management - Project Coordinator/Training Management - Patient Management/Nursing Care - EMS - Other persons with necessary expertise[7] for the project	1. Assignment of Counterpart (1) Project Director (2) Project Manager (3) Other counterpart personnel	
1-1-2. To establish a medical informatics division followed by the development of a strategic plan for IT-driven hospital management.	2. Training in Japan - Hospital Management - Patient Management - Patient Management - EMS - Other necessary training	2. Facilities, equipment and materials - Suitable office space with necessary equipment - Supply or replacement of machinary, equipment, instruments, vehicles, tools, spare parts, and any other materials necessary for the Project other than the equipment provided by JICA	
1-1-3. To develop a detailed recruitment plan for medical professionals (medical doctors, nursing staff and other co-medical staff[2]), administration staff and other support staff.			
1-1-4. To develop pre-service and post-graduate training systems for medical professionals.	3. Provision of equipment - Necessary equipment for project activities	3. Local Costs - Runnung expenses necessary for the implementation of the Project - Mean of transport and travel allowance for the JICA experts for official travel within Mongolia	**<Issues and countermesures>**
1-2. Sound management of MJH			
1-2-1. To develop a comprehensive preparation plan for the opening of MJH, including detailed plans for medical services, bed management and procurement.			
1-2-2. To provide medical professionals, administration and other support staff with Training in Japan for administrative management.			
1-2-3. To develop a hospital management plan (budget/revenue and expenditure management, personnel management, etc.) on the basis of the knowledge and experiences acquired through the Training in Japan.			
1-2-4. To provide technical support in bylaws-based practical operation newly established divisions such as the health support division and the ME division.			
1-2-5. To support the medical informatics division to promote practical introduction of IT system(s) in accordance with the strategic plan.			
1-2-6. To develop a physical distribution management system (PDMS)[3] for medicines, medical materials, consumables and office supplies.			

2-1. Introduction of team-approached patient management system			
2-1-1. To conduct Trainings in Japan for patient management (team-approach, standardization of medical services, risk management, etc.) geared to eligible medical professionals.			
2-1-2. To develop practical tools and communication system for team-approached patient management as well as capacity development plans geared to co-medical staff, on the basis of the knowledge and experiences acquired through the Training in Japan.			
2-1-3. To conduct in-hospital trainings for MJH staff on the team-approached patient management.			
2-1-4. To introduce the team-approached patient management to several pilot departments by utilizing the practical tools and the communication system on a trial basis at the MNUMS General Hospital.			
2-1-5. To phase the team-approached patient management to all clinical departments after the opening of MJH on the basis of the results of the trial introduction.			
2-2. Standardization of medical services			
2-2-1. To develop a plan for the introduction of clinical pathways and staff capacity development, on the basis of the Training in Japan (Activity 2-1-1).			
2-2-2. To introduce clinical pathways for both patients and medical professionals to several pilot departments in accordance with the guidelines on a trial basis at the MNUMS General Hospital.			
2-2-3. To develop model clinical pathways appropriate for MJH on the basis of the results of the trial introduction and to apply them to prioritized departments.			
2-3. Risk management of medical care			
2-3-1. To develop regulations[4] for the prevention of medical accidents on the basis of analyses of the incidents and its prevention activities in the MNUMS General Hospital.			
2-3-2. To conduct a risk management workshop on the basis of the regulations geared to all MJH staff before the opening of MJH.			
2-3-3. To perform regular monitoring activities at the initiative of the risk management committee after the opening of MJH.			

2-4: Prevention and control of nosocomial infections			
2-4-1. To establish a committee for the prevention and control of nosocomial infections followed by the development of guidelines and/or regulations for it.			
2-4-2. To establish a surveillance system for nosocomial infections such as the identification of causative microorganisms and statistical analyses.			
2-4-3. To conduct a workshop for the prevention and control of nosocomial infections on the basis of the regulations geared to all MJH staff before the opening of MJH.			
2-4-4. To perform regular monitoring on the compliance with the guidelines and/or regulations at the initiative of the committee.			
3-1. To develop a plan of the Training in Japan for other medical technologies than those related to medical practices[5] regarding diagnoses and treatments of diseases.			
3-2. To conduct Training in Japan for eligible medical staff in accordance with the plan.			
3-3. To conduct training debriefings, intra-/inter-department study meetings, etc. for promoting technology sharing.			
4-1. To conduct trainings of operational management, which include staffing and financial management geared to staff members engaged in EMS.			
4-2. To develop bylaws, which include staffing for the EMS center for providing prompt testing, diagnosis and treatment, on the basis of the knowledge and experiences acquired through the Training in Japan.			
4-3. To incorporate findings and experiences of the EMS in MJTH on the lectures in MNUMS.			
4-4. To widely share the findings and experiences of EMS in MJH with medical professionals in Mongolia through the implementation of conferences, etc.			

1: Although the title of the hospital was modified to "Mongolia National University of Medical Sciences, Mongolia-Japan Hospital (MJH)" by the Ministerial Degree of MECSS, the title of the Project follows "the Mongolia-Japan Teaching Hospital (MJTH)" as defined in the Record of Discussions.

2: Nurses, nutritionists, pharmacists and physical therapists, etc.

3: Strengthening existing PDMS, newly development of PDMS within the framework of the currently-developing hospital IT system, introducing a Supply, Processing & Distribution (SPD) system, etc.

4: Near-miss reporting, incident reporting, patient identification using bar code, etc.

5: Medical treatment, imaging diagnostics, histo-pathological diagnostics, and other novel diagnostics (including newly emerging infectious diseases, radiation, medical quality and safety management)

6: At the time of admission of COVID-19 positive patients, the occupancy rate applies to general wards (excluding emergency wards).

7: Infection Prevention & Control, SPD, IT, ME, etc.