**People's Republic of Bangladesh**
**Ship International Hospital**

# People's Republic of Bangladesh
# Project for Capacity Development of ICU Using Telemedicine under COVID-19 Pandemic

# Project Completion Report

February 2023

Japan International Cooperation Agency (JICA)

C.D.C. International Corporation
T-ICU Co., Ltd.

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**Abbreviations**

| Abbreviation | Meaning |
|---|---|
| CCU | Cardiac Care Unit |
| C/P | Counterpart Personnel |
| COVAX | COVID-19 Vaccine Global Access |
| COVID-19 | Coronavirus disease, emerged in 2019 |
| D2D | Doctor to Doctor |
| ECG | Electrocardiogram |
| ER | Emergency Room |
| GDP | Gross Domestic Product |
| ICU | ICU |
| ICT | Information and Communications Technology |
| IP Camera | Internet Protocol Camera |
| IT | Information Technology |
| JCC | Joint Coordinating Committee |
| JICA | Japan International Cooperation Agency |
| LAN | Local Area Network |
| MOHFW | Ministry of Health and Family Welfare |
| NAS | Network Attached Storage |
| NICU | Neonatal Intensive Care Unit |
| N2N | Nurse to Nurse |
| PDM | Project Design Matrix |
| PICS | Post Intensive Care Syndrome |
| PO | Plan of Operation |
| PoE | Power over Ethernet |
| R/D | Record of Discussions |
| SDGs | Sustainable Development Goals |
| SIH | Ship International Hospital |
| UHC | Universal Health Coverage |
| UPS | Uninterruptible Power Supply |
| WHO | World Health Organization |

**Glossary**

| Term | Definition |
|---|---|
| Remote ICU | System and service which intensivists provide with medical support through communication network. |
| Remote ICU Service | Service including advice from physicians and nurses in remote ICU. |
| Remote ICU Telecommunication System | Communication system to provide telemedicine in remote ICU.<br>The term "ICT equipment" in this report refers to each piece of equipment that makes up the system.<br>This report uses the term "remote ICU telecommunication system" when all equipment is connected and operating as a system. |
| Scheduled Care | Medical support such as advice and guidance provided by Japanese intensive care specialists to physicians and nurses in Ship International Hospital on a regular basis on a set date and time. |
| Remote Conference | Conference where medical professionals from both side review local cases and share the information to improve the future medical care. |

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# Chapter 1 Project Outline

## 1.1 Background

Since the World Health Organization (WHO) declared a public health emergency of international concern over the global outbreak in January 2020, the novel coronavirus disease (COVID-19) has repeatedly peaked in many countries, and as of January 2023, the number of infected people has exceeded 655 million and more than 6.6 million people have died (WHO statistics, as of January 3, 2023). While the spread of the disease has been decreasing due to the worldwide progress of vaccination, there is still no prospect of it being brought under control. In the early stages, the infection had spread mainly in Europe and the United States; however, from mid-2021, it has spread rapidly in developing countries, starting in Southeast Asia and the Pacific regions. As the global pandemic has become more prolonged, the response to developing countries, especially those with fragile health care systems, has been financial and material assistance from international organizations and bilateral cooperation, or the provision of vaccines through the COVAX Facility. Japan has long been working to strengthen infectious disease control and healthcare systems to achieve universal health coverage (UHC) in developing countries. The COVID-19 crisis necessitated support for capacity building of physicians and nurses who provide intensive care to critically ill patients and those at risk. In addition, there is a lack of intensive care units (ICU) to isolate infected patients. With this situation in mind, as part of the Japan International Cooperation Agency (JICA) Global Healthcare Initiative, JICA decided to study the feasibility of providing remote technical cooperation to physicians and nurses in developing countries who treat critically ill patients in the ICU. Advice and guidance through telemedicine is expected to be an effective form of multi-country cooperation in pandemic situations, where it is difficult to deploy specialists in the field. Moreover, JICA decided to identify the needs for the provision of equipment and medical facilities related to remote ICU, and JICA experts conducted the Data Collection Survey on Use of ICU Telemedicine in Pandemic Situations (hereinafter referred to as the "preliminary survey") from December 2020, covering 18 medical institutions in 15 countries. In the preliminary survey, JICA experts proposed the establishment of a communication network to provide clinical support such as training, advice, and guidance for local physicians and nurses by Japanese intensivists and intensive care certified nurses, and the improvement of medical facilities (medical containers) with the necessary medical equipment for the ICU, and surveyed the support needs of the target medical institutions. JICA experts decided to gradually extend cooperation to countries where support is desired after completing the necessary procedures.

Ship International Hospital (SIH) is a private hospital in Bangladesh that JICA helped establish with its Private Sector Investment Finance. Based on the results of the preliminary survey, and also in response to a request from SIH, to strengthen the medical capacity of intensive care of physicians and nurses in charge of the ICU, JICA has been implementing a technical cooperation project to strengthen the hospital's ability to provide intensive care services under the “Project for Capacity Development of ICU Using Telemedicine under COVID-19 Pandemic” (hereinafter referred to as the “Project”), and signed the record of discussions (R/D) on January 18.

## 1.2 Outline

### 1.2.1 Purpose

The Project aims to provide clinical support for critically ill patients with COVID-19 and other diseases through a communication network system and is expected to achieve the following outcomes.

Table 1-1. Overall Goal, Project Purpose, Outputs, and Activities

| | |
|---|---|
| Overall Goal | |
| Medical care service system is established in SIH in order to administrate and treat critically ill patients affected by COVID-19 and other infectious diseases. | |
| Project Purpose | |
| Medical capacity of intensive care service in SIH is strengthened in order to administrate and treat critically ill patients affected by COVID-19 and other diseases. | |
| Expected Outputs | |
| Output 1 | Medical professionals (including doctors and nurses) in SIH understand the basics on intensive |

| | |
|---|---|
| | care and the functions of ICU telemedicine system, and are ready to receive remote D2D/N2N technical advice and support. |
| Output 2 | Capacity of medical professionals is enhanced through remote D2D.N2N technical advices and consultations conducted by the JICA expert team including certified critical care physicians and nurses. |
| Output 3 | The environment of SIH including the remote-ICU telecommunication system is maintained in order to make good use of remote D2D/N2N trainings and technical advice. |
| Activity Outline | |
| Activity 1 | In SIH, follow-up sessions on medical matters regarding intensive care (including diagnosis and treatment of infectious diseases) and basic operational techniques of the ICU telemedicine system are conducted on remote basis by a team of Japanese doctors and nurses specialized in intensive care in order to support the trainings conducted during the preliminary survey. |
| Activity 2 | Capacity building through D2D/N2N technical advice and scheduled care is provided remotely by Japanese intensivists and nurses. |
| Activity 3 | Introduction of the remote-ICU telecommunication system is confirmed and maintained. |

### 1.2.2 Project Target

The Project primarily targets medical professionals working in the ICU and IT engineers of SIH in the People's Republic of Bangladesh; however, it does not exclude medical professionals from other departments in the hospital.

### 1.2.3 Project Period

The project implementation period is from June 29, 2022 to February 10, 2023.

## 1.3 Activities

### 1.3.1 Activities Related to Output 1

#### 1.3.1.1 Training

JICA experts have already conducted remote training on medical issues, such as diagnosis and treatment of infectious diseases and adjuvant therapy in intensive care by Japanese intensivists and certified nurses, and on the operation of remote ICU telecommunication systems as a pilot activity during the preliminary survey.

However, the nurses currently working at SIH did not undergo the training, as they were hired after the training was implemented in the preliminary survey. Given the circumstances, and in response to requests from SIH, JICA experts decided to provide four of the following six topics identified as training needs for ICU nurses of SIH in the Project as real-time online training. The remaining two topics were implemented in follow-up sessions.

1. Monitoring of critically ill patients
2. Physical assessment of respiration
3. Physical assessment of circulation
4. Management of ventilator patients
5. Basic of ECG reading
6. Post operative care

**(1) Real-time Online Training**

**1) Training Outline**

Japanese intensivists and intensive care certified nurses directly provide the real-time online training for physicians and nurses at the target hospital using each of the basic training packages for physicians and nurses, which were developed in the preliminary survey. This training is for physicians and nurses working in the ICU and is composed of nine courses in a total of one hour each; however, the Project provided the following courses based on four topics for nurses that SIH requested.

<Courses for SIH Nurses>

- Module 1. Unit 1 Monitoring of critically ill patients
- Module 1. Unit 2 Physical Assessment：Respiration
- Module 1. Unit 3 Physical Assessment of Circulation in the ICU
- Module 2. Unit 2 Respiratory care for COVID-19 patients

The syllabus of the basic training package is given in Table 1-2.

Table 1-2 Syllabus for Real-time Online Training Program

| Course Outline |
|---|
| This training course was designed to provide basic knowledge and skills for physicians involved in intensive care and for nurses working in the ICU, as well as basic content related to COVID-19. The course consists of four modules.<br>Module 1: Training for Intensive Care Physicians, Training for Intensive Care Nurses<br>Module 2: Training on COVID-19<br>Module 3: Feedback<br>Module 4: Additional Skill Training |
| Training Objective |
| At the end of the training, participants are expected to have acquired the basic knowledge to practice intensive care and nursing in intensive care. |
| Training Target Group |
| Physicians involved in intensive care but not intensivists and nurses who take care of critically ill patients at ICU. |
| Course Design |
| The training course is designed with 9 courses in total. Each course has a duration of about 60 minutes. After watching a 30-minute video, there is time for discussion and question and answers (Q&A).<br><For Physicians><br>1) Module 1. Unit 1 Post Cardiac Arrest Syndrome<br>2) Module 1. Unit 2 Basics of Mechanical Ventilation<br>3) Module 1. Unit 3 Shock<br>4) Module 1. Unit 4 Sepsis<br>5) Module 1. Unit 5 Nutritional Therapy in Critical Care Medicine<br>6) Module 2. Unit 1 Infection control for COVID-19 patients and family care during restricted visitation<br>7) Module 2. Unit 2 Treatment of COVID-19<br>8) Module 3. Unit 1 Feedback<br>9) Module 4. Unit 1 Fluid Management in the ICU<br><br><For Nurses><br>1) Module 1. Unit 1 Monitoring of critically ill patients<br>2) Module 1. Unit 2 Physical Assessment: Respiration<br>3) Module 1. Unit 3 Physical Assessment of Circulation in the ICU<br>4) Module 1. Unit 4 Nursing Care for Patients with Sepsis<br>5) Module 1. Unit 5 Post Intensive Care Syndrome (PICS)<br>6) Module 2. Unit 1 Basics of Infection Control and Staff / Family Care of COVID-19 patients<br>7) Module 2. Unit 2 Respiratory care for COVID-19 patients<br>8) Module 3. Unit 1 Feedback<br>9) Module 4. Unit 1 Nursing Care to Prevent PICS for Patients Equipped with Artificial Ventilators |
| Training Structure and Evaluation Methods |
| This course is composed of a lecture, discussion, and Q&A. The lecture is designed to learn visually with schematic diagrams and videos. At the beginning and end of each unit, a pre-test and post-test is administered on the training system to check understanding of the training content. The Feedback session of Module 3 provides an interpretation of pre-test and post-test in Module 1 and 2 and Q&A up to Module 3. Each training conducts a questionnaire after the training to evaluate whether the content met the needs of participants. |

| Logistics |
|---|
| Each participant needs a device (PC, smartphone, tablet, etc.) and communication environment. When participating in the training in a group, it is necessary to prepare a stable communication environment and training equipment (PC, projector, speakers, etc.) to conduct the training via online video conferencing. |

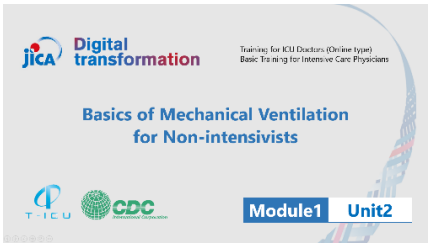
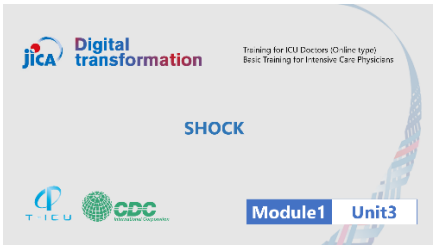
### 1.3.1.2 Follow-up Session

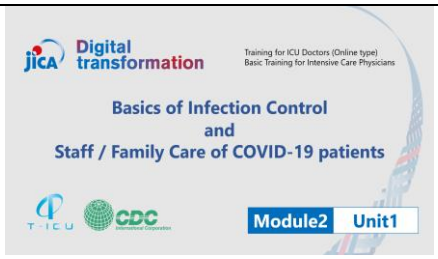
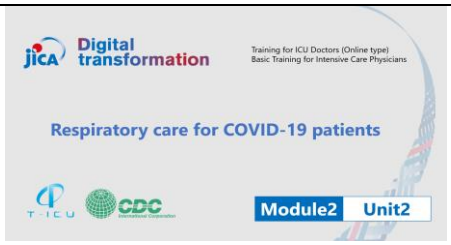
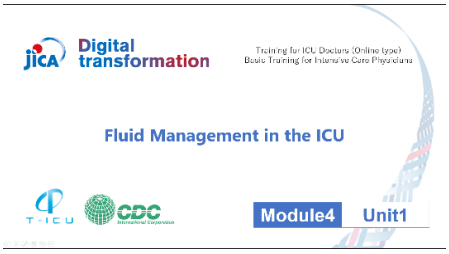
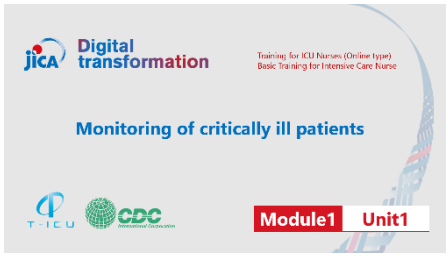
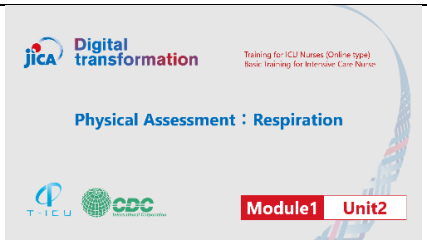
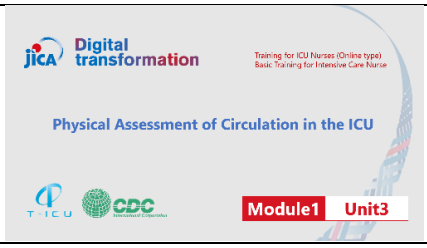
During the activity period of the remote ICU service, JICA experts extracted knowledge and know-how in intensive care that needed to be strengthened in SIH, determined the themes that contributed to improving the medical capacity of SIH in consultation with SIH, and conducted the follow-up sessions on the themes.

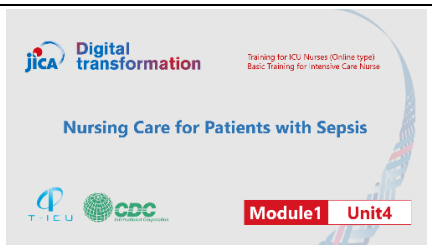
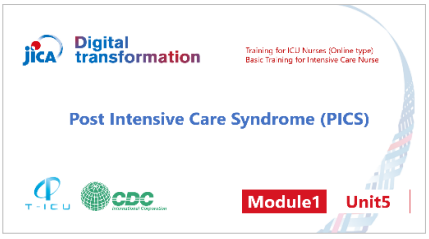
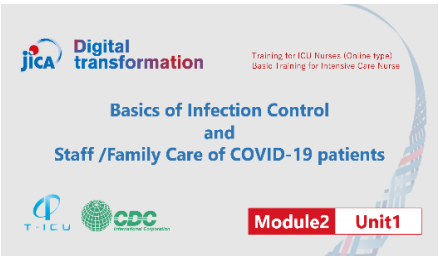
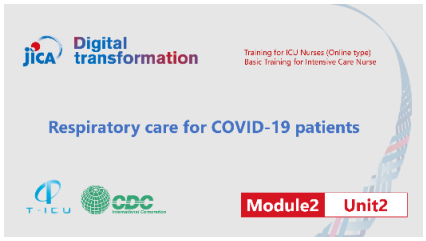
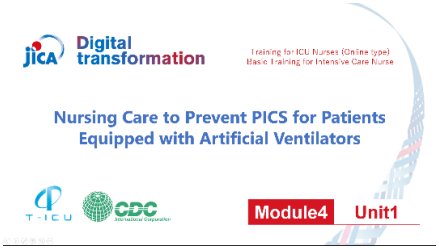
### 1.3.1.3 Provision of Training Module

The Project provided a set of training materials that have been made up in a separate ongoing technical cooperation project in 11 countries and encouraged their use for human resource development at SIH (See Table 1-3).

Table 1-3 List of Audio-Visual Training Tools

| No | Video image | Video details |
|---|---|---|
| 1 |  | Course name : Training for ICU Doctors (Online type)<br>Basic Training for Intensive Care Physicians<br>Title : Post Cardiac Arrest Syndrome<br>Target : Doctors who are not specialized in intensive care<br>Media : MP4 and Text<br>Language : English<br>Time : 10 min 31 s |
| 2 |  | Course name : Training for ICU Doctors (Online type)<br>Basic Training for Intensive Care Physicians<br>Title : Basics of Mechanical Ventilation<br>Target : Doctors who are not specialized in intensive care<br>Media : MP4 and Text<br>Language : English<br>Time : 17min 41 s |
| 3 |  | Course name : Training for ICU Doctors (Online type)<br>Basic Training for Intensive Care Physicians<br>Title : Shock<br>Target : Doctors who are not specialized in intensive care<br>Media : MP4 and Text<br>Language : English<br>Time : 12 min 41 s |
| 4 |  | Course name : Training for ICU Doctors (Online type)<br>Basic Training for Intensive Care Physicians<br>Title : Sepsis<br>Target : Doctors who are not specialized in intensive care<br>Media : MP4 and Text<br>Language : English<br>Time : 26 min 28 s |

| | | |
|---|---|---|
| 5 |  | Course name : Training for ICU Doctors (Online type)<br>Basic Training for Intensive Care Physicians<br>Title : Nutritional Therapy in Critical Care Medicine<br>Target : Doctors who are not specialized in intensive care<br>Media : MP4 and Text<br>Language : English<br>Time : 18 min 21 s |
| 6 |  | Course name : Training for ICU Doctors (Online type)<br>Basic Training for Intensive Care Physicians<br>Title : Infection control for COVID-19 patients and family care during restricted visitation<br>Target : Doctors who are not specialized in intensive care<br>Media : MP4 and Text<br>Language : English<br>Time : 8 min 57 s |
| 7 |  | Course name : Training for ICU Doctors (Online type)<br>Basic Training for Intensive Care Physicians<br>Title : Treatment of COVID-19<br>Target : Doctors who are not specialized in intensive care<br>Media : MP4 and Text<br>Language : English<br>Time : 14 min 23 s |
| 8 |  | Course name : Training for ICU Doctors (Online type)<br>Basic Training for Intensive Care Physicians<br>Title : Fluid Management in the ICU<br>Target : Doctors who are not specialized in intensive care<br>Media : MP4 and Text<br>Language : English<br>Time : 31 min 06 s |
| 9 |  | Course name : Training for ICU Nurses (Online type)<br>Basic Training for Intensive Care Nurse<br>Title : Monitoring of critically ill patients<br>Target : Nurses working in intensive care<br>Media : MP4 and Text<br>Language : English<br>Time : 23 min 38s |
| 10 |  | Course name : Training for ICU Nurses (Online type)<br>Basic Training for Intensive Care Nurse<br>Title : Physical Assessment : Respiration<br>Target : Nurses working in intensive care<br>Media : MP4 and Text<br>Language : English<br>Time : 23 min 32 s |
| 11 |  | Course name : Training for ICU Nurses (Online type)<br>Basic Training for Intensive Care Nurse<br>Title : Physical Assessment of Circulation in the ICU<br>Target : Nurses working in intensive care<br>Media : MP4 and Text<br>Language : English<br>Time : 29 min 23 s |

| | | |
|---|---|---|
| 12 |  | Course name : Training for ICU Nurses (Online type)<br>Basic Training for Intensive Care Nurse<br>Title : Nursing Care for Patients with Sepsis<br>Target : Nurses working in intensive care<br>Media : MP4 and Text<br>Language : English<br>Time : 24 min 20 s |
| 13 |  | Course name : Training for ICU Nurses (Online type)<br>Basic Training for Intensive Care Nurse<br>Title : Post Intensive Care Syndrome<br>Target : Nurses working in intensive care<br>Media : MP4 and Text<br>Language: English<br>Time : 28 min 17s |
| 14 |  | Course name : Training for ICU Nurses (Online type)<br>Basic Training for Intensive Care Nurse<br>Title : Basics of Infection Control and Staff / Family Care of COVID-19 patients<br>Target : Nurses working in intensive care<br>Media : MP4 and Text<br>Language : English<br>Time : 16 min 50 s |
| 15 |  | Course name : Training for ICU Nurses (Online type)<br>Basic Training for Intensive Care Nurse<br>Title : Respiratory care for COVID-19 patients<br>Target : Nurses working in intensive care<br>Media : MP4 and Text<br>Language : English<br>Time : 18 min 32 s |
| 16 |  | Course name : Training for ICU Nurses (Online type)<br>Basic Training for Intensive Care Nurse<br>Title : Nursing Care to Prevent PICS for Patients Equipped with Artificial Ventilators<br>Target : Nurses working in intensive care<br>Media : MP4 and Text<br>Language : English<br>Time : 16 min 29 s |

### 1.3.2 Activities Related to Output 2

#### 1.3.2.1 Scheduled Care

The Project implemented scheduled care through doctor to doctor (D2D) / nurse to nurse (N2N) technical advice about inpatients admitted and treated at the ICU of SIH. The main activity of the Project is "scheduled care," in which information on a patient's medical conditions, vital signs, blood test results, etc., is shared, and the on-site physician is provided advice and guidance on matters such as future treatment plans, hospitalization preparations, or debriefing in the case of death. Scheduled care is not a 24-hour service but a joint discussion on a "day and time" pre-determined by both sides. Considering the burden on SIH, scheduled care was conducted once a week (Physicians: every Monday, 17:00-18:00 Japan time (14:00-15:00 Bangladesh time), Nurses: every Wednesday, 17:00-18:00 Japan time (14:00-15:00 Bangladesh time)), basically in such a way that Japanese intensivists and intensive care certified nurses participated in conferences or rounds that are already routinely held at SIH.

### 1.3.3 Activities Related to Output 3

#### 1.3.3.1 Remote ICU Telecommunication System

**(1) Confirmation and Support for Use of Remote ICU Telecommunication System**

JICA experts confirmed that the remote ICU telecommunication system, which was introduced as a pilot activity in the preliminary survey, was functioning properly. When there were any problems with the operation of the system or the user's operation, JICA experts provided support for the use of the system in cooperation with the ICT staff of SIH.

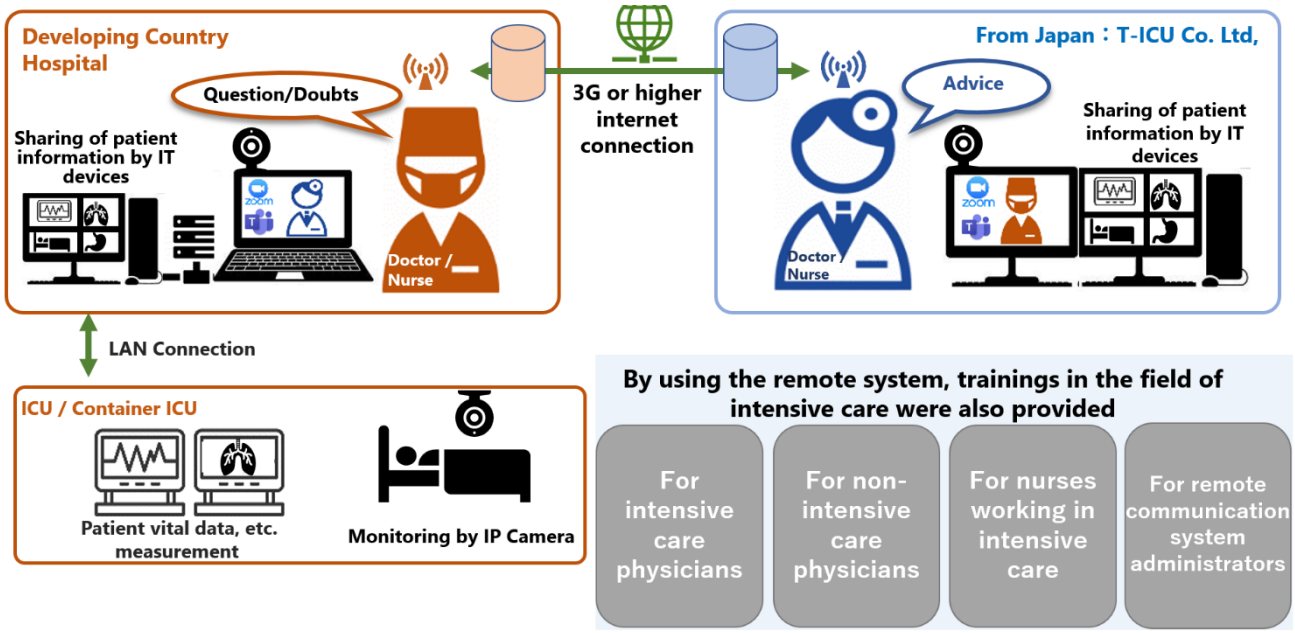



Figure 1-1 Remote ICU Telecommunication Use

The equipment and other necessary components of the remote ICU telecommunication system are deemed lent equipment from JICA to SIH during the project period, and the final handling of this equipment, listed in R/D after project completion will be determined between the JICA Bangladesh Office and SIH. The equipment that was lent is listed in Table 1-4.

Table 1-4. List of Lent Equipment

| Name of Property | Standard and Part Number | Quantity |
|---|---|---|
| Desktop | Fujitsu / ESPRIMO WD2/E2 | 2 |
| LAN card | 10Gtek / 82576-2T-X1 | 2 |
| Keyboard | Logitech / MK120 | 2 |
| 3K Monitor | LG / 32QN600-B | 1 |
| Full HD Monitor | LG / 32ML600M | 1 |
| NAS server 6bay | Synology / DS1621+ | 2 |
| HDD 4TB | Seagate / ST4000VN008 | 12 |
| Microphone speaker | YAMAHA / YVC-330 | 7 |
| Audio cable | Order Made | 5 |
| Adapter for Microphone speaker | MUSB-SV1A | 5 |
| IP Camera | Amcrest / IP4M-1051 | 6 |
| PoE Splitter | ANVISON | 6 |
| IP Camera | Axis / M5525-E | 5 |
| Web Camera | Logicool / C922n | 1 |
| Main router | Netgear / RBK852 | 2 |
| Transformer (for UPS) | Swallow electronic / SU-2000GX-505 | 2 |
| 24 port PoE hub | Netgear / GS724TP | 1 |
| 8 port PoE hub | Netgear / GS108PP | 6 |
| Document scanner | ELMO / MX-P2 | 1 |
| HDMI capture board | Uraytech / UHE265-1L | 2 |
| Mobile Camera Stand | As One / 7-1225-01 | 5 |
| Clip | Smallrig / 2164 | 5 |
| Camera Stand (bracket) | Order Made | 5 |
| USB cable for UPS-NAS | APC / AP98117J | 2 |
| UPS | APC / SMC2000I | 2 |

# Chapter 2 Results of Project Activities

## 2.1 Overall Input Results

In the Project, the (re-commissioned) experts involved in training and scheduled care consisted of 6 physicians and 8 nurses. The Project also included 9 experts (see Appendix 1 for the list of JICA experts). A total number of 8 C/Ps were assigned. The total cost of ICT equipment was 3,519,000 yen, which included the cost of equipment and the cost of system construction.

Table 2-1 Input Results

| Input | Results |
|---|---|
| Number of Physicians Assigned | 6 |
| Number of Nurses Assigned | 8 |
| Number of Experts Assigned | 9 |
| Number of C/Ps Assigned | 8 |
| ICT Equipment (Thousand yen) | 3,519 |

* Units: Experts and C/Ps are number of people; equipment is Japanese yen cost.

Table 2–2 shows the results of overseas travel by JICA experts.

Table 2-2 Results of Overseas Travel by JICA Experts

| Name | Role of Assignment | Period of Travel | Purpose of Travel |
|---|---|---|---|
| Dr. Yoshihiko Konoike | Remote Intensive care 1 / Remote-ICU Planning 1 / Doctor | October 15 to 20, 2022 | To visit SIH and exchange opinions |
| Mr. Shingo Moriguchi | Remote Intensive care 2 / Remote-ICU Planning 2 /Nurse 1 | October 15 to 20, 2022 | To visit SIH and exchange opinions |
| Ms. Kaniz Fatema | Remote-ICU Management | October 15 to 20, 2022 | To visit SIH and exchange opinions |
| Mr. Shuji Tokumaru | Regional Director for Asia-Pacific / Monitoring | October 15 to 21, 2022 | To visit SIH and exchange opinions |

## 2.2 Activities Related to Overall Management

### 2.2.1 Operational Plan

Based on the findings from the preliminary survey, the operational plan of the Project demonstrated six general operational policies: (1) comprehensive management and administration of the project, (2) assignment of personnel to prevent delays in work due to the absence of experts, (3) implementation of work with due consideration for safety measures, (4) strengthening safety measures related to COVID-19 and flexible handling of activities, (5) implementation of work emphasizing ownership by SIH, and (6) implementation of monitoring. At the same time, from a technical perspective, it presented two technical policies: (1) development of a framework for cooperation with medical professionals from SIH and an agreement on exemption status for implementation of scheduled care, and (2) support for engineers who maintain and manage lent equipment. The plan also summarized the specific activities and division of duties for each outcome in the project design matrix (PDM).

### 2.2.2 Legal Agreement

To implement the Project, it was decided to conclude an agreement (contract) with SIH to confirm that remote counseling and guidance by Japanese intensivists in scheduled care does not constitute medical treatment and to guarantee exemption of responsibility. An agreement was signed by five representatives of SIH, Ship

Aichi Medical Service Ltd. (SAMSL) (an operating company of SIH), JICA, and the technical cooperation project team (two consultancy companies). The agreement also included handling the protection of patients' personal information and clarified how such information should be handled in a remote ICU.

### 2.2.3 Work Plan and Monitoring Sheet

JICA experts prepared and submitted the Work Plan and the Monitoring Sheet as seen in Table 2-3.

Table 2-3 Status of Preparation of Work Plan and Monitoring Sheet

| Date | Document |
|---|---|
| July 29, 2022 | Submitted the Work Plan and the Monitoring Sheet ver. 0 |
| November 15, 2022 | Submitted the Monitoring Sheet ver.1 |

### 2.2.4 Progress Report

The Project began on June 30, 2022, and the activities between July and September 2022 have been summarized and submitted in a progress report.

### 2.2.5 Kick-off Meeting, Joint Coordinating Committee (JCC), and Regular Meetings

**(1) Kick-off Meeting**

The kick-off meeting with SIH was held on July 25, 2022. The outline of the meeting is given in Table 2-4.

Table 2-4 Outline of Kick-off Meeting

| | |
|---|---|
| Date and Time | July 25 (Mon.) 2022, JST 17:00 – 18:00 (BST 14:00 – 15:00) |
| Number of Participants | 21 |
| Main Participants | SIH: Chief Financial Officer, Project Coordinators, Focal Points (ICU physicians, ICU nurse, IT engineers)<br>JICA Headquarters: Portfolio Management Division,<br>Private Sector Partnership and Finance Department, Deputy Director, Officer<br>JICA Bangladesh Office: Program Adviser<br>JICA Expert Team: Mr. Nakagawa, Dr. Konoike, Mr. Moriguchi, Mr. Ichimura, Ms. Fatema, Mr. Tokumaru, Ms. Nakazato, Mr. Takada, Ms. Fujiwara |
| Contents | 1. Explanation of Activities and Schedule<br>The Regional Director, Mr. Tokumaru, explained the activities related to Outputs 1 to 3, to be implemented as a technical cooperation project, and the project schedule, adding that the JCC was listed for the first week of August in the explanatory material; however, the schedule would be adjusted upon consultation with the participants.<br><br>2. Explanation of ICT Equipment Handling (Transfer)<br>The Regional Director explained that a tripartite meeting would be held among JICA, SIH, and Ministry of Health and Family Welfare (MOHFW) to obtain MOHFW's approval and written permission to transfer the equipment to SIH; this received agreement from the participants.<br><br>3. Main Q&A<br>Q. When will scheduled care start? (SIH, ICU physician)<br>A. Planning to start in early August, but the date will be decided after coordinating the schedule among the coordinators. (Mr. Tokumaru)<br>Q. Is the date and time of scheduled care fixed? (Project Coordinator)<br>A. Scheduled care is to be held on a day and time to be determined by prior arrangement, during which Japanese intensive care specialists and SIH physicians and nurses exchange opinions regarding patient care and management, and |

| | |
|---|---|
| | Japanese intensive care specialists provide advice and guidance. The schedules of the lecturers and interpreters must also be taken into consideration, and the day and time should be decided at least two weeks prior to the scheduled care. (Mr. Tokumaru)<br>Q. If there are no COVID-19 patients, what cases will be handled in scheduled care? (Project Coordinator)<br>A. The primary target will be COVID-19 patients, but if there are no COVID-19 patients, non-COVID-19 patients or past cases can be discussed. (Mr. Tokumaru) |

**(2) JCC**

The first JCC was held on September 21, 2022. An outline is shown in Table 2-5.

Table 2-5 Outline of First JCC Meeting

| | |
|---|---|
| Date and Time | September 21 (Wed.) 2022, JST 18:00 - 19:00 (BST 15:00 - 16:00) |
| Number of Participants | 22 |
| Main Participants | SIH: Project Coordinators, Focal Points (ICU physicians and ICU nurse)<br>JICA Headquarters: Portfolio Management Division, Private Sector Partnership and Finance Department, Senior Director, Deputy Director, Officer<br>Office for Science Technology and Innovation & Digital Transformation, Governance and Peacebuilding Department, Deputy Director<br>JICA Bangladesh Office: Senior Representative, Program Advisor, Program Officer<br>JICA Expert Team: Mr. Nakagawa, Dr. Konoike, Mr. Moriguchi, Mr. Ichimura, Mr. Tokumaru, Ms. Nakazato, Mr. Takada, Ms. Fujiwara |
| Contents | 1. Explanation of Activities and Schedule<br>The Regional Director, Mr. Tokumaru, explained the activities related to Outputs 1 to 3, to be implemented as a technical cooperation project, and the project schedule.<br><br>2. Explanation of ICT Equipment Handling (Transfer)<br>The Regional Director explained and confirmed that a tripartite meeting would be held among JICA, SIH, and MOHFW to obtain MOHFW's approval and written permission to transfer the equipment to SIH.<br><br>3. Main Q&A<br>Q. I would like to ask about feedback on the project activities to date. (Senior Representative of JICA Bangladesh Office)<br>A. Mr. Moriguchi, an ICU certified nurse from the JICA Expert Team, reviewed that as for the nurses, we have been able to conduct interactive discussions during scheduled care since the first session He also stated that the discussion points tended to be a little more on medical examination and expressed desire to focus on nursing care in the future.<br>A. The ICU Nurse Manager from Ship International Hospital, gave us feedback that scheduled care was a good opportunity to learn and has been very beneficial to the nurses.<br>A. The ICU physician also stated that scheduled care has been going well so far.<br>Q. Is there any problem with the remote implementation of this Project? Are there any measures to deal with them? (Program Officer of JICA Bangladesh Office)<br>A. The ICU physician mentioned that since currently there are only a few critically ill patients with COVID-19, it would be good to deal with critically ill patients in the general ICU. She expressed that Japan was advanced in terms of medical care, and so it would be great to learn about treatment and management of critically ill patients through this Project and apply the learnings to future care in SIH.<br>A. Mr. Tokumaru stated that the Japanese side and SIH have been organizing regular meetings to exchange information and opinions regarding this Project, and that in |

| | |
|---|---|
| | case they face any issues in the implementation of scheduled care or training, they would use the regular meetings to discuss and enforce measures to address them.<br>Q. Regarding the handling of ownership transfer of ICT equipment, there are three options based on the Record of Discussions. Ship International Hospital and JICA will need to discuss and proceed with this matter. (Program Advisor of JICA Bangladesh Office)<br>The Program Advisor reminded all the participants that there is not only an option of voluntary transfer of ICT equipment but also two other options. The options available to deal with the ownership of ICT equipment are as follows:<br>1) JICA may sell the equipment to SIH at book value if SIH is willing to continue the use of ICU telemedicine service; or,<br>2) JICA may remove them from the project site if SIH no longer needs ICU telemedicine service; or<br>3) JICA might be able to hand them over to SIH as a voluntary transfer only if JICA and SIH agree on such an arrangement with the MOHFW.<br><br>The Work Plan was approved at this meeting. |

The second JCC was held on December 22, 2022. An outline is shown in Table 2-6.

Table 2-6 Outline of Second JCC Meeting

| | |
|---|---|
| Date and Time | December 22 (Thu.) 2022, JST 17:00 - 18:00 (BST 14:00 - 15:00) |
| Number of Participants | 21 |
| Main Participants | SIH: Project Manager, Project Coordinators, Focal Points (ICU physician and ICU nurses)<br>JICA Headquarters: Portfolio Management Division, Private Sector Partnership and Finance Department, Senior Director, Deputy Director, Officer<br>JICA Bangladesh Office: Senior Representative, Representative<br>JICA Expert Team: Mr. Nakagawa, Dr. Konoike, Mr. Ichimura, Ms. Fatema, Mr. Tokumaru, Ms. Nakazato, Mr. Takada, Ms. Fujiwara |
| Contents | 1. Overview of Project Goals, Outputs, and Activity Schedule<br>The Regional Director reviewed the project goals and outputs and provided a brief report on the activities based on the schedule.<br><br>2. Project Outputs<br>The Project Coordinator provided reports on the outputs based on each indicator.<br>● Output 1: Additional training and follow-up sessions were carried out in the Project.<br>Indicator: "Number of remote trainings and D2D / N2N advice and consultation"<br>● Output 2: Scheduled care was provided as the main activity of the Project.<br>Indicator 1: "Number of medical professionals who have received remote training and D2D / N2N advice and consultation"<br>Indicator 2: "Number of clinical cases in which remote technical advices were provided"<br>● Output 3: The remote ICU telecommunication system was set up in the preliminary survey. Operational checks and troubleshooting were carried out, and scheduled care was provided without problems.<br>Indicator: "The remote ICU telecommunication system has been installed and maintained functioning"<br><br>3. Project Evaluation<br>● JICA experts presented the project evaluation results based on the OPI (Operational Performance Indicator) evaluation and provided evaluation comments for each of the physicians and nurses. |

Physicians: Presentation materials on past patient cases were easy-to-understand and well organized. Although there were few ICU patients and the originally-planned scheduled care was only carried out a few times, it is believed that the medical support and training provided will be useful for intensive care in the field.
Nurses: The gradual increase in scheduled care participants demonstrated their willingness to participate in the Project. Given the short time frame in which the Project's activities (scheduled care and training) were carried out, it must have been challenging for many of the ICU nurses, many of whom were young and inexperienced. However, it is our hope that the knowledge gained through scheduled care will be put into practice. Even though we may work in different locations, our roles as nurses are the same. We look forward to growing together to provide the best care possible to patients.

4. Project Comments from SIH Physicians and Nurses
   - Physicians: The Project, which included scheduled care, has been extremely beneficial in improving patient care and management at SIH. We have much to learn from the Japanese intensivists, and intend to put their techniques into practice in Bangladesh to improve patient care and management.
   - Nurses: We have learned a lot from the training and scheduled care, and are now able to provide nursing care more efficiently than before. Thanks to the detailed description of nursing care during scheduled care, we are now able to provide more accurate nursing care.

5. JICA Expert Recommendations
   The JICA expert provided the following two recommendations for SIH:
   - It is essential to conduct ongoing training at SIH using the provided training modules.
   - It is also advisable to take the necessary steps to improve physician and nurse retention rates. Doing this will lead to achieving the Project's overall goal.

6. Q&A session
   Q. We would like to hear any feedback or comments from SIH on recommendation #2 from the JICA expert. (JICA Bangladesh Office Senior Representative)
   A. Although the focus of medical assistance in the Project was ICU patients, we would like to see clinical cases with a wider range of patients, including children and pregnant women. (SIH, ICU physician)
   A. To improve skills, I would like to see scheduled care continue biweekly. I would like to see training implemented in the intensive care field on drugs and reading medical images. I would also like Japanese nurses to locally provide hands-on training and medical support. (SIH, ICU nurse)
   A. Doctors were burdened with preparing training using past cases when no ICU patients were available, but since the implementation of scheduled care for ICU patients, remote ICU support has been extremely beneficial to the work of doctors and nurses on the front lines. Due to the short timeframe of the Project, it was difficult to coordinate with the routine work of physicians and nurses. If more time was given to prepare, perhaps they could have spared more time to devote to the project work (Project Coordinator).

   Q. Are there any plans for future training programs at SIH? (JICA Bangladesh Office Senior Representative)
   A. I believe that such training should be continued in the future. If possible, I would like it to be implemented over a longer timeframe, whether online or in person. (SIH, ICU physician)

**(3) Regular Meetings with SIH**

Regular meetings with SIH project coordinators were held every Wednesday since July 26, 2022 (19 meetings in total).

These meetings were attended by the project coordinators and other members involved in project management from SIH, as well as JICA officials, to confirm the COVID-19 infection situation in SIH and Bangladesh, coordinate the schedule of the project activities, confirm the progress of the Project (additional online training, scheduled care, and follow-up sessions), and exchange opinions and coordinate support for the use of the remote ICU telecommunication system, travel of JICA experts to the site, and other issues.

### 2.2.6 Public Relations

The basic policy for the public relations activities of the Project is given in Table 2-7.

Table 2-7 Basic Policy of Public Relations

| No. | Activities of Public Relations | Media |
|---|---|---|
| 1 | To prepare newsletters at events such as JCC, scheduled care, follow-up session to disseminate information about the project activities. | ・ JICA technical cooperation website |
| 2 | To conduct public relations activities such as interviews, highlighting contributions of JICA, or other external media activities. Other activities may be conducted using the consultant company's own public relations media, if necessary, in consultation with JICA. | ・Print products<br>・Events |

Based on this basic policy, JICA experts conducted the following public relations activities from June 29 to December 27, 2022, to raise awareness about the Project (Table 2-8).

Table 2-8 List of Public Relations Activities

| No. | Publication Date | Publication Media |
|---|---|---|
| 1 | September 27, 2022 | Newsletter on the JICA Technical Cooperation Website:<br>*Full-scale Launch of Remote ICU Support for Ship International Hospital, a Private General Hospital in Bangladesh* |
| 2 | November 20, 2022 | Newsletter on the JICA Technical Cooperation Website:<br>*On-site visits have further enhanced remote ICU support* |

### 2.2.7 Setting of Indicators (Target Values)

As for the indicators of the PDM, JICA experts and SIH set the average number of participating physicians and nurses per training and scheduled care and the number of cases handled per scheduled care as numerical targets. The average number of participants was set to be at least 60% of the 5 physicians and 11 nurses who were registered for the Project (specifically, 3 physicians per session and 6.6 nurses per session), and the average number of cases handled per scheduled care was set to be 1 case per session as a target value.

### 2.2.8 Operational Performance Indicators

From the perspective of complementing the quantitative evaluation, JICA experts have examined ways to understand the qualitative changes due to the Project (especially in scheduled care) among the physicians and nurses at SIH and the improvements made in the ICU and introduced the Operational Performance Indicators (OPIs) consisting of five indicators to capture qualitative changes in the target medical institutions and project personnel, in addition to the evaluation indicators stipulated in the PDM. The OPIs capture the proficiency level related to the project outputs in stages based on self-evaluation by project stakeholders and evaluation by JICA experts regarding the following five categories: 1) Medical doctors are able to use the remote technologies and conduct the medical treatment with quality, 2) Nurses are able to use the remote technologies and conduct the nursing with quality, 3) The hospital can make use of the remote ICU communication system effectively, 4) The hospital can add the ICU medical equipment and install the facilities and make use of them effectively as the institution (after the installation of the equipment and facilities), and 5) The hospital can use the remote ICU

service effectively as the institution. The results are presented as a spider chart. The evaluation was to be conducted after a certain period after the implementation of scheduled care. The Project evaluated four items, excluding the fourth category regarding ICU medical equipment and facilities.

## 2.3 Activities and Evaluation Related to Output 1

### 2.3.1 Additional Training

**(1) Real-time Online Training for Nurses**

As mentioned in Section 1.3.1.1, real-time online training on the following four topics was conducted in accordance with a request from SIH even though the training had already been conducted during the preliminary survey.

- Module 1. Unit 1 Monitoring of Critically Ill Patients
- Module 1. Unit 2 Physical Assessment: Respiration
- Module 1. Unit 3 Physical Assessment of Circulation in the ICU
- Module 2. Unit 2 Respiratory Care for COVID-19 Patients

Real-time online training was provided to 11 nurses. Each session had an average of 8 participants. Training results are summarized in the table below.

Table 2-9 Results of Real-time Online Training (Nurses)

| Module | Date | Number of Participants | Test Results Out of 5 (ratio of correct answer) | |
|---|---|---|---|---|
| | | | Pre-test | Post-test |
| M1-1 | October 3, 2022 | 11 | 3.0 (60%) | 2.9 (58%) |
| M1-2 | October 17, 2022 | 9 | 1.0 (20%) | 1.0 (20%) |
| M1-3 | October 14, 2022 | 5 | 1.4 (28%) | 1.4 (28%) |
| M2-2 | October 31, 20222 | 7 | 2.3 (46%) | 2.4 (49%) |

■ **Overall Assessment of Pre- and Post-tests and Questionnaire:**

(1) Pre- and post-test results revealed that only M2–2 increased by 0.1 point on the post-test, but there was no significant difference between the pre-test and post-test results.

(2) The correct answer rate was low overall; however, because M1–2 had a particularly low rate, with just 1 out of every 5 questions answered correctly, JICA experts decided to make clear the cause with SIH.

(3) Many positive responses and comments were received from the questionnaires, noting that the course promoted learning and was useful. However, since there were some discrepancies between the pre- and post-test results and the questionnaire results, JICA experts decided to review the results with the nurses to determine their cause.

(4) The majority of respondents to the questionnaires indicated that they understood the lecture content, and their comprehension of the language and training materials was rated at above average to high.

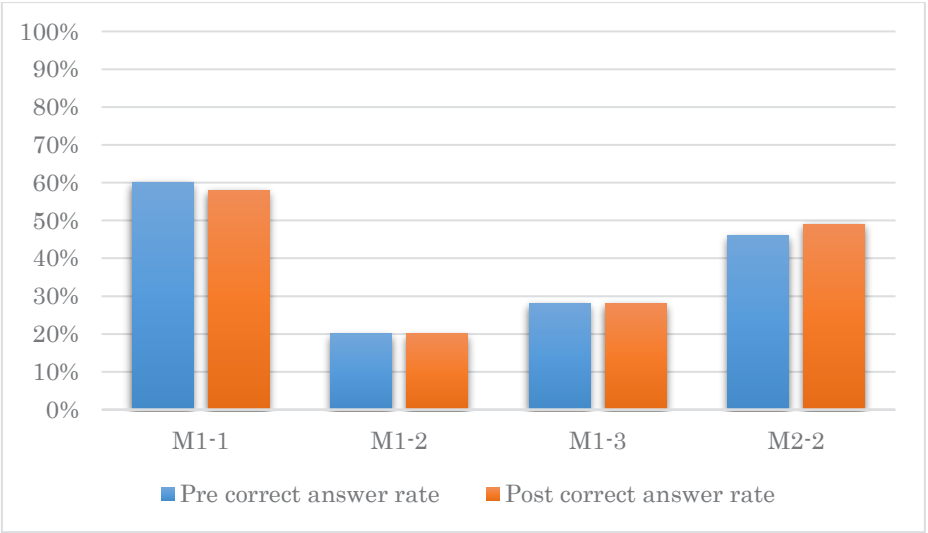



Figure 2-1 Ratio of Correct Answers for Pre- and Post-tests

11 nurses signed up to participate, with an average of 8 per session. Although some participants joined late for the training due to their regular duties, they listened intently to the lecturer's comments and advice and also asked questions to the Japanese side. Participants eagerly took part in the training, especially the nurse coordinator, who actively asked questions to the Japanese side, and the willingness to learn was apparent. The pre- and post-test results, on the other hand, revealed that the participants did not fully understand the training content. One possible explanation is the participants' limited (English) language skills. Although the questionnaire revealed no difficulty in answering questions from a language perspective, upon speaking with the nurse coordinator during dispatch to SIH, it was revealed that, except for that person, their language skills were not that strong. The nurse coordinator and others were interviewed about the training after the November 2 scheduled care for nurses in order to clarify the cause for poor test results in real-time online training and to promote capacity building through future scheduled care and follow-up sessions. The interviews revealed that, as suspected, the primary cause was a lack of (English) language proficiency. All but the nurse coordinator had limited language skills, and the AI narration of the training videos was so fast and continuous that participants had to shift their attention to the next part of the narration before they could understand what they were hearing, making understanding the content even more difficult. JICA experts reasoned that allowing the nurses to review training content in written form at their own pace would improve their understanding. Thus, training video slides with narration for M1–1 and M1–3, which had a particularly low testing score, were distributed to participants, who were asked to read through the materials on their own and retake the test after a week. M1–2 was excluded from the retest this time because the lecture was based on the practical physical assessment on respiration which was given to ICU nurses during Mr. Moriguchi's visit to SIH. The retest results showed a higher percentage of correct answers for both M1–1 and M1–3 versus the previous testing, achieving a deeper understanding of the training content, as shown in the table below. Based on this, JICA experts concluded that participants could better understand the dialogue during scheduled care and follow-up sessions by explaining in a slightly slower pace and easy-to-understand manner. Questions that still produced a low percentage of correct answers were addressed during subsequent scheduled care.

Table 2-10 Results of Re-tests of Real-time Online Training (Nurses)

| Module | Date | Number of Participants | Initial Test Results Out of 5 (ratio of correct answer) | Retest Results Out of 5 (ratio of correct answer) |
|---|---|---|---|---|
| | | | Post-test | Post-test |
| M1-1 | November 13, 2022 | 10 | 2.9 (58%) | 3.6 (72%) |
| M1-3 | November 13, 2022 | 10 | 1.4 (28%) | 4.3 (86%) |

■ **Outcomes of Training from a Medical Perspective:**

In response to SIH's request, real-time online training was provided for four topics. As participants did

not fully understand the content based on the results of the pre- and post-tests, the reasons for this were investigated. As mentioned above, it became evident that the nurses had insufficient basic knowledge, owing primarily to weak English language skills and inexperience. Given that the existing training materials have been widely used in another project and are not tailored to the readiness of the collaborating hospital, JICA experts can conclude that the level of comprehension is determined by whether the participant possesses sufficient language skills and fundamental knowledge. Although real-time online training was positioned as a means to ensure the basic knowledge required for ICU nursing, a future issue to address will be preparing teaching materials that are tailored to the readiness of the target hospital.

For M1–1 and M1–3, which had low post-test scores, the training materials were provided and participants were expected to self-study at their own pace with support from SIH nurse coordinator. Timed to coincide with travel to the region and based on the practical exercises conducted locally, JICA expert provided a lecture on the physical assessment of respiration, which was studied in M1–2. This succeeded in improving the retest results for M1–1 and M1–3. SIH nurses had not performed the physical assessments studied in M1-2 and M1-3 before. However, they have been committing efforts to it in their nursing duties since the training, which demonstrates the effectiveness of the training.

**(2) Overall Comments**

Based on the results of the pre- and post-tests, JICA experts were able to better recognize the level of basic knowledge and language skills among the nurses participating in the Project with regard to ICU nursing care. Doing this allowed subsequent scheduled care to be more effectively implemented, as the Japanese lecturers strove to explain in as simple a language as possible, and the interpreters spoke more slowly while reducing the amount of sentences translated at one time. Because many of the participating nurses were young and inexperienced, and because there are no opportunities for further training after obtaining a nursing license in Bangladesh, with SIH being no exception, the nurses found the supplementary training provided by the Project to be extremely beneficial. After the training, the nurses, led by the nurse coordinator, were proactive in their learning, reviewing the training content and exchanging opinions among themselves. JICA experts believe that improving physician and nurse abilities in intensive care and nursing care can be accomplished by continuing to provide learning opportunities based on the provided training package and conducting training and study sessions for SIH physicians and nurses.

### 2.3.2 Provision of Training Module

In addition to providing a package of training materials that has been refined during the preliminary survey of an ongoing technical cooperation project on remote ICU in 11 countries, the Project has also provided SIH with a set of training materials (modules) specifically developed for the follow-up sessions with nurses conducted in the Project, and has encouraged their use by SIH for its own human resource development. Module 4–1 was added to the training package as additional training material for physicians and nurses. Also added were two training modules: "M4–1 Fluid Management in the ICU" for physicians and "M4–1 Nursing Care to Prevent PICS for Patients Equipped with Artificial Ventilators " for nurses.

### 2.3.3 Follow-up Session

**(1) Physicians**

The follow-up sessions for physicians listed below were held. In terms of training themes, based on discussions with SIH, it was decided to cover "Shock," a highly requested training topic among SIH physicians, as well as "Fluid Management," an important shock-related topic.

Table 2-11 Outline of Follow-up Session (Physicians)

| Date | Theme | Number of Participants |
|---|---|---|
| November 28, 2022<br>17:00 - 18:00 JST<br>(14:00 - 15:00 BST) | Shock | 6<br>Male: 4<br>Female: 2 |

| | | |
|---|---|---|
| December 19, 2022<br>17:00 - 18:00 JST<br>(14:00 - 15:00 BST) | Fluid Management | 3<br>Male: 3<br>Female: 0 |

■ **Content of Advice and Results / Challenges / Improvements of Cooperation (Physicians)**

Based on discussions with SIH, follow-up sessions on the above-mentioned two themes were held. Both sessions covered the fundamentals. The first half-hour consisted of watching a video on the topic, while the second half-hour included an additional lecture on the topic from the lecturer, followed by a Q&A session in which the lecturer answered questions from the participants.

Both sessions were filled with lively debate, with many participants asking questions and making comments.

Participants appeared to generally understand the lecture content. They also asked questions on how to handle specific cases, how they are handled in Japan, etc., demonstrating that the participants' understanding had improved significantly.

**(2) Nurses**

The following follow-up sessions for nurses were held. Nurses were given training on six themes for two reasons: No trainees from the preliminary survey's training were employed at SIH during the project period, and there were strong requests from nurses for training on these themes. As mentioned above, four of the themes were delivered through real-time online training, while the remaining two (Basics of ECG Reading and Post Operative Care) were delivered as follow-up sessions due to the difficulty in positioning scheduled care as a training forum because there may not be suitable cases in scheduled care and because it does not allow enough time for education.

Table 2-12 Outline of Follow-up Session (Nurses)

| Date | Theme | Number of Participants |
|---|---|---|
| December 5, 2022<br>17:00 - 18:00 JST<br>(14:00 - 15:00 BST) | ECG | 11 (ICU: 6, ER: 5)<br>Male: 2<br>Female: 9 |
| December 15, 2022<br>17:00 - 18:00 JST<br>(14:00 - 15:00 BST) | Post Operative Care | 21 (ICU:8, CCU: 1, Surgical Unit: 7, NICU: 1, ER: 2, General Ward: 1)<br>Male: 2<br>Female: 19 |

■ **Content of Advice and Results / Challenges / Improvements of Cooperation (Nurses)**

To fulfill a request by SIH, follow-up sessions on the above two topics were provided. With adjustments made for the participants' lack of basic knowledge and language skills, JICA experts prepared the material for follow-up sessions, taking care to ensure that the content was basic and provided them in advance to allow participants to study beforehand. The session was presented by an interpreter rather than a lecturer, and extra attention was placed on making sure that the presentation was slow enough for participants to digest the content. To better facilitate learning, it was also decided to include a summary of the presentation's content.

Although the content for the first follow-up session only covered the basics of electrocardiography, as described below, participants were unable to comprehend the entirety of the content presented. Understanding ECG is essential knowledge for ICU nurses, but it also necessitates a basic understanding of cardiac anatomy and physiology, which is a challenging subject even for Japanese nurses. Given this context, if even a modest amount of capacity building is achieved, the follow-up sessions could serve as a chance to promote further education in the field. Because the time available for training was limited due to the nature of the Project, which is primarily focused on medical support, the training aspect will be considered a future issue to address.

Post Operative Care was also limited to the basics of general theory. The session focused on the most common observation points of general anesthesia and lumbar anesthesia. Although the mechanism by which symptoms appear was mentioned in the material, the detailed mechanism was not discussed, and the explanation was limited to key points. There were a number of questions raised during the Q&A session that JICA experts believe led to a better understanding of the subject, such as when and in what situations to observe and what points to pay attention to. Because the content provided at this time was of a universal nature, different and more

in-depth observation and care are required depending on the bioinvasive characteristics or specifics of each surgery. JICA experts expected that the participants learned the universal content and would apply it to specific theories.

**(3) Overall Comments (Results, Issues, and Improvements)**

For physicians, the follow-up sessions were conducted regarding the SIH-requested training topics of "Shock" and "Fluid Management" using the existing training materials. Both sessions had highly interactive discussions, with numerous questions and comments from the participants. Because many of the physicians at SIH are young, it was an opportunity for them to learn or review basic intensive care knowledge. Physicians with some experience commented that the training was a valuable opportunity for them to learn about Japanese medical practices and share their experiences with Japanese specialists through discussion.

As previously stated, "ECG" and "Post Operative Care" were taught via lecture format to nurses. Taking into account the nurses' level and language ability, lecture presentation materials were distributed to participants beforehand, and Ms. Fatema provided interpretation in Bengali during the lectures to meet the participants' request to facilitate understanding of the lectures. Participants' degree of understanding of the first follow-up session was checked by the project coordinator, which revealed that they did not understand all the lecture content due to the language barrier and the large volume of material. A number of approaches were employed to improve this, including distributing materials ahead of time, and summarizing the main points of the lecture after the English interpreter explained the entire lecture. While the two topics covered in the follow-up sessions provide essential knowledge for nurses working in the ICU, they require a basic familiarity with intensive nursing care to fully comprehend the content. To compensate for this, effort was put into making explanations as simple as possible by focusing on fundamental content and using numerous diagrams. For younger nurses with limited experience after graduating from nursing school, there is no doubt that the activities of the Project, including the follow-up sessions, provided a valuable opportunity. By continuing to provide educational opportunities such as training and conferences, it will be possible for ICU nurses to continue acquiring knowledge and putting it into practice in the field.

SIH physicians were also encouraged to attend a physician-specific follow-up session on tropical infectious diseases held on September 1 as part of a separate technical cooperation project on remote ICU in 11 countries, and six SIH physicians attended the session.

### 2.4 Activities and Evaluation Related to Output 2

#### 2.4.1 Scheduled Care

**(1) Physicians**

JICA experts have conducted 13 scheduled care sessions for physicians since August 29, 2022, 9 of which dealt with clinical cases and 4 of which were training sessions. In total, 38 physicians participated in scheduled care. A summary of the implementation results is given in Table 2-13.

Table 2-13 Outline of Scheduled Care (Physicians)

| No. | Theme | Number of Participants | Number of Cases |
|---|---|---|---|
| 1 | Acute methanol poisoning, sepsis, acute respiratory failure, coma | 2 | 1 |
| 2 | Fever, hypothyroidism, valvular disease, anemia | 3 | 1 |
| 3 | Stevens-Johnson syndrome | 2 | 1 |
| 4 | Hypokalemia | 2 | 1 |
| 5 | Dengue fever, septic shock | 4 | 1 |
| 6 | Shock, metabolic acidosis, non-ST-elevation myocardial infarction (NSTEMI), acute renal failure | 3 | 1 |
| 7 | Hemorrhagic cerebrovascular disease with secondary ventricular enlargement | 3 | 1 |

| | | | |
|---|---|---|---|
| 8 | Severe dengue fever, sepsis, acute renal failure | 3 | 1 |
| 9 | Acute respiratory distress syndrome (ARDS), right foot cellulitis, dengue fever, rheumatoid arthritis | 4 (ER: 1) | 1 |
| Total | Total Number of Participants / Cases | 26 (ER: 1) | 9 |

As there were no ICU patients on days when scheduled care was implemented, from the beginning of scheduled care until mid-October, scheduled care dealt with past cases. This placed a heavy burden on the presenter, as it took significant time to select the cases to discuss and prepare for the presentation. This was further compounded by the fact that the ICU has only one intensivist, and the majority of other physicians are relatively young (new) with only around three years of experience. After discussion with SIH during the JICA experts' visit to SIH, it was decided that if there were no patients in the ICU on the day of scheduled care, the following topics would be covered in the training sessions instead of scheduled care (no pre/post-tests).

- Module 1. Unit 4 Sepsis
- Module 1. Unit 5 Nutritional Therapy in Critical Care Medicine
- Module 1. Unit 2 Basics of Mechanical Ventilation
- Module 1. Unit 1 Post Cardiac Arrest Syndrome

Following the above arrangements, four training sessions were held in place of scheduled care. The training sessions conducted are as below.

Table 2-14 Outline of Training Session (Physicians)

| Date | Training Topic | Number of Participants |
|---|---|---|
| November 21, 2022<br>17:00 - 18:00 JST<br>(14:00 - 15:00 BST) | Sepsis | 3 |
| December 5, 2022<br>17:00 - 18:00 JST<br>(14:00 - 15:00 BST) | Nutritional Therapy in Critical Care Medicine | 4 |
| December 12, 2022<br>17:00 - 18:00 JST<br>(14:00 - 15:00 BST) | Basics of Mechanical Ventilation | 3 |
| December 26, 2022<br>17:00 - 18:00 JST<br>(14:00 - 15:00 BST) | Post Cardiac Arrest Syndrome | 2 |
| Total | Total Number of Participants | 12 |

■ **Content of Advice and Results / Challenges / Improvements of Cooperation (Physicians)**

The number of cases advised by Japanese intensive care specialists was 9.

Using an Excel sheet, which was provided in advance for sharing patient information, the physicians at SIH were well prepared for the presentation of the case from the first session. Their presentations were informative, and the explanations themselves were easy to understand.

However, the presented cases differed somewhat from the expertise of the Japanese intensivists because the medical conditions differed somewhat from those of ICU cases (2nd: chronic fever patient, 3rd: quadriplegic patient). The lecturers, who were Japanese intensivists, gave logical answers regarding scheduled care; however, from the original perspective of "improving the competence of ICU care," it would be better for them to choose different cases. However, during the hospital visit on October, it was confirmed that few ICU patients were admitted, and that such appropriate case presentations were difficult to provide. Therefore, it was decided to treat appropriate patients, if any, through scheduled care after the visit, and if no such patients are available, to hold a training session, although this was not the main purpose of scheduled care. A policy was established to prepare the above-mentioned themes in consultation with SIH, and then select and implement them as needed. The first half of the session comprised a 30-minute video, followed by a 30-minute Q&A session with the

lecturer on that theme. Each session was filled with a lively exchange of opinions, the recipients appeared quite satisfied.

When patients were available, the normal scheduled care was carried out. After the visit, participants became proficient with the operation of ICT equipment and information was shared smoothly with almost no extra time and effort needed. Discussions became more active with each meeting, contributing to enhancing the treatment ability of the hospital's ICU.

**(2) Nurses**

JICA experts conducted 15 scheduled care sessions for nurses since August 31, 2022. In total, 87 nurses participated in scheduled care. A summary of the implementation results is given in Table 2-15.

Table 2-15 Outline of Scheduled Care (Nurses)

| No. | Theme | Number of Participants | Number of Cases |
|---|---|---|---|
| 1 | Acute alcohol intoxication, aspiration pneumonia, sepsis, multiple organ dysfunction syndrome (MODS), hyperkalemia | 4 | 1 |
| 2 | Traffic injury, hemothorax, sepsis | 4 | 1 |
| 3 | Aspiration pneumonia | 4 | 1 |
| 4 | Stroke, hypertension | 4 | 1 |
| 5 | Severe pneumonia, septic shock | 3 | 1 |
| 6 | Bronchial asthma | 3 | 1 |
| 7 | Aspiration pneumonia, electrolyte imbalance | 3 | 1 |
| 8 | Cerebral hemorrhage | 5 | 1 |
| 9 | Dengue fever | 5 | 1 |
| 10 | Septic shock, cellulitis, dengue fever, acute respiratory distress syndrome (ARDS) | 11 (ER: 5) | 1 |
| 11 | Respiratory failure, status asthmaticus | 9 (ER: 6, Surgical Unit: 1) | 1 |
| 12 | Septic shock, cardiogenic shock | 9 (ER: 6) | 1 |
| 13 | Diabetes ketoacidosis, alcoholic cirrhosis, chronic kidney disease, type-2 respiratory failure | 6 | 1 |
| 14 | Acute febrile illness, viral hepatitis | 9 (ER: 5) | 1 |
| 15 | Chronic obstructive pulmonary disease (COPD) exacerbation, pulmonary hypertension, septic shock | 8 (Surgical Unit: 3) | 1 |
| Total | Total Number of Participants / Cases | 87 (ER: 22, Surgical Unit: 4) | 15 |

■ **Content of Advice and Results / Challenges / Improvements of Cooperation (Nurses)**

The number of cases advised by Japanese intensive care specialists was 15.

From the first session, both sides have been conducting active discussions, and scheduled care has become interactive. SIH has been taking an active stance toward scheduled care, not only listening to advice from Japanese nurses, but also posing additional questions. Many of the discussion points made by SIH were related to medical treatment and clinical conditions, and JICA experts received the impression that the focus was not on nursing care. In addition, despite the presentation of cases, many general questions were not individualized. To deal with this issue, JICA experts have instructed Japanese lecturers to provide advice that would lead to nursing care. While reviewing the nursing plan and other information in the Excel sheet format, JICA experts also continue to facilitate discussions on nursing care and identify issues in ICU nursing to provide support for resolving such issues.

In order to provide support in a way that promotes issue resolution in ICU nursing at SIH, a survey on

ICU nursing issues was administered. The results revealed that, rather than issues in nursing practice, the majority of nurses were only in their first or second year of ICU experience and lacked basic knowledge. Furthermore, it became clear after repeated scheduled care sessions that, except for the nurse coordinator, the nurses lacked (English) language skills, which was not apparent at the outset. To address this, lectures were adjusted with the lecturer to incorporate explanations in as simple language as much as possible without using abbreviations. Information was also shared with the interpreters, and they were instructed to interpret more slowly and carefully than usual.

Although there were few patients admitted to the ICU, resulting in limited opportunities to implement scheduled care via ICT equipment on actual patients, there were many discussions on patients with respiratory failure, and it was possible to give specific advice on implementation methods, including position management and oral care. However, since it was obvious that many of the participants lacked some of the basic knowledge, much of the guidance offered was methodological in nature. More in-depth discussions on the rationale, assessment methods, etc., which seemed to be too challenging for the staff nurses in attendance, were discussed with the nurse coordinator. Given the short duration of this clinical support project, the limited time available for educational provision in the Project presented a significant obstacle. On the other hand, JICA experts believe that being involved in such a project at such an early stage of their experience may have given the young nursing staff a perspective from which they should assess patients and learn in their future development as nurses.

**(3) Overall Comments**

Although both physicians and nurses had some basic knowledge, experience, and willingness to participate in activities, some issues had become apparent through scheduled care. As a result, during the JICA experts' visit on October, the training and scheduled care to date were reviewed with the physicians and nurses, and opinions were exchanged.

The physicians appeared to lack a clear sense of purpose in terms of how to use scheduled care to gain knowledge and experience, and improve their skills as ICU doctors. Thus, the objectives and outputs of scheduled care were explained, and opinions on how to resolve issues and use scheduled care were exchanged. This resulted in achieving a shared understanding of both the purpose of scheduled care and the importance of using the remote ICU telecommunication system. It should be noted that scheduled care dealt with past cases because there were no ICU inpatients admitted when scheduled care was implemented. The related selection of past cases and preparation of presentation material was found to be time-consuming and did not serve to motivate participants to actively participate. Because of this, it was decided to hold training sessions when ICU inpatients were not available, in which the training topics requested by the hospital's physicians would be covered in a lecture format, thereby allowing the participating physicians to actively learn. Scheduled care was implemented for patients admitted to the ICU from mid-October to early November. The remote ICU telecommunication system was used at the time to display patient status, bedside monitor readings, X-ray and CT images, and other paper-based data, and Japanese intensivists provided accurate advice and recommendations based on detailed patient data. Training sessions were held when patients were not available, using the real-time online training materials. Because the topics covered in the training were based on requests from the hospital's physicians, many questions were raised by participants, and the discussion was interactive. Questionnaire comments pointed out that it was an excellent opportunity to learn about patient treatment and management in other countries such as Japan, and that the content is useful in their daily work. By focusing on scheduled care while appropriately implementing training sessions as an alternative, this approach not only reduced the burden on participating physicians but also provided supplemental education and responded flexibly to SIH's needs.

As nurses also lacked in certain areas of nursing in intensive care, it was felt that the training was important in helping understand what nursing care is and how important nursing care in intensive care is. Furthermore, given the problem of low language skills, rather than simply teaching nursing care methods, there were thorough explanations that emphasized why nursing care is carried out, and scheduled care was implemented while gauging the understanding of participating nurses. Many discussion points included cases related to pathology rather than nursing care, but among them, Japanese nurses attempted to connect the discussion to what kind of perspective nurses should take to observe patients and provide nursing care, which resulted in the improvement of skills and knowledge required for ICU nurses, as well as a change in awareness. The SIH nurse coordinator reported that scheduled care not only taught nursing care methods, but also communicated a substantial amount of information on root causes and assessments, and that now that the nurses are practicing it in the field, nursing care is more efficient and accurate than before. Despite differences in

knowledge and experience among the participating nurses, it was clear that the nurse coordinator, who also serves as the ICU's chief nurse, has been holding review and opinion-exchange meetings voluntarily since the scheduled care training, and is clearly making efforts to train the younger nurses as well.

### 2.4.2 Monitoring of the Remote ICU Service

JICA experts attempted to utilize the remote ICU telecommunication system from the first instance of scheduled care; however, unfortunately, the electronic medical records could not be shared during the scheduled care because of the limited authorization of the ID to log in to SIH's electronic medical record system. Consequently, SIH created a new electronic medical record system ID for scheduled care so that electronic medical records could be shared in scheduled care. In the scheduled care for nurses, the SIH nurses discussed the patient's condition with a Japanese certified intensive care nurse while sharing the patient's electronic medical record. However, no patients have been admitted to the ICU at the time of implementation of scheduled care since the start of the scheduled care; therefore, patients have not been observed through the camera for the first month since the start of scheduled care.

When scheduled care first began, it dealt with past cases because there were no ICU inpatients available. This led to some physicians at SIH voicing concerns about the extra time needed to select cases to study and organize patient information for scheduled care. In response, JICA experts met with the SIH side during their visit to the hospital to determine the following solution: If a patient is in the ICU on the scheduled care date, that patient will be treated; if there is no patient on that day, the five topics requested by SIH as training needs will be progressively implemented during the scheduled care time. It was also agreed that when treating ICU patients, the participants would not be required to submit an Excel sheet or presentation materials containing patient information ahead of time, but would instead share patient information using ICT equipment during scheduled care. This reduced the burden on SIH physicians and promoted their active participation in subsequent scheduled care.

Under these circumstances, an increasing number of patients ended up being admitted to the ICU beginning in mid-October, and scheduled care for physicians was provided by using patients admitted to the ICU from October 17 to November 7. At that time, information was shared with the Japanese side using IP cameras for images of patients and vital signs, a document scanner for paper-based data, and images from electronic medical records such as CT and X-ray images. Based on that information, Japanese intensivists were able to provide accurate advice and recommendations on patient treatment and management methods. Scheduled care was also implemented for nurses when patients were admitted to the ICU on the day of scheduled care, utilizing the remote ICU telecommunication system to the fullest extent possible.

The use of the remote ICU communication system is critical for effectively implementing scheduled care, and in this regard, nurses were trained to use the remote ICU telecommunication system prior to scheduled care, and all registered nurses attended; however, due to scheduling conflicts, only one physician could attend. Because of this, individual equipment training was provided for physicians at SIH by setting aside approximately 30 minutes before the start of scheduled care to provide a lecture on operational methods from SIH's ICT staff. Since both physicians and nurses were unfamiliar with how to operate equipment at the outset of scheduled care, it was necessary to provide them with training on a voluntary basis by having them access the equipment when they had time. JICA experts explained the functions and operation of ICT equipment to the physicians and nurses at SIH during their visit, encouraged them to use it in their future scheduled care, and requested that the SIH's ICT staff continue to provide operational support. The cooperation of ICT staff contributed to the smooth use of equipment during scheduled care.

During the discussion on scheduled care, both physicians and nurses actively engaged in the Q&A sessions, as they listened to the explanations by Japanese specialists and took notes, which showed their eagerness to learn. While it has only been about four months in fact since the start of scheduled care, relationships among the participants have been built, and scheduled care has been implemented in a friendly atmosphere.

Both physicians and nurses were evaluated using Operational Performance Indicators (OPIs) in September 2022, one month after the start of scheduled care, and again in December 2022, four months after the start of scheduled care. Several enhancements were made to how scheduled care was delivered, including the involvement of multiple experts in each scheduled care session, the use of OPIs, remote ICU service monitoring, and the incorporation of educational aspects, where appropriate, while taking into account local conditions and participant requests.

## 2.5 Activities and Evaluation Related to Output 3

### 2.5.1 Confirmation of Introduction and Maintenance of Remote ICU Telecommunication System

#### 2.5.1.1 Confirmation of Introduction of Remote ICU Telecommunication System

JICA experts conducted an operation check of the remote ICU telecommunication system, which was installed in SIH in the preliminary survey, with the ICT staff from SIH on July 28, 2022, before user training and scheduled care, and confirmed that all the equipment was working properly.

#### 2.5.1.2 Support for Use of Remote ICU Telecommunication System

In August 2022, JICA experts implemented the remote ICU telecommunication system user training for one physician and 11 nurses in the presence of SIH ICT staff (see Figure 2-1). The training was held three times (August 8, 10, and 16) in small groups so that each participant could operate each piece of the ICT equipment. During the training, the Japanese ICT expert explained how to operate the microphone speaker, document scanner, and IP camera, which would often be utilized in scheduled care, and informed the participants how to share the screen of the electronic medical record of SIH and the precautions to be taken when using each ICT equipment. (See Appendix 2 for details.)

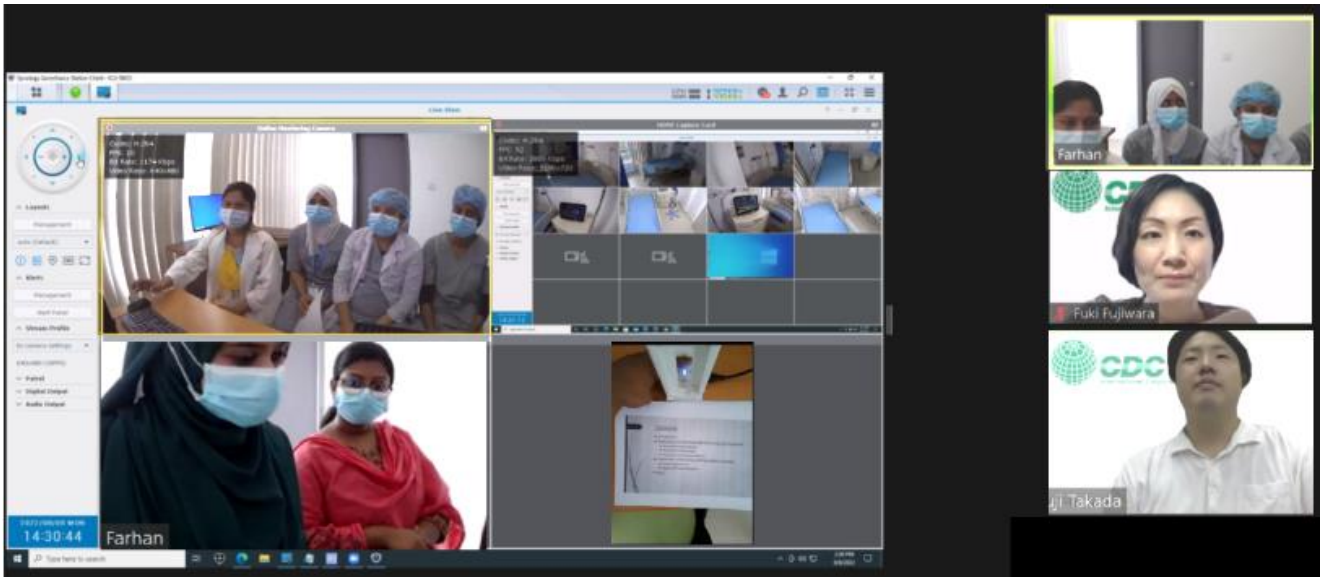



Figure 2-2 Remote ICU Telecommunication System User Training

On the hospital side, there was an issue with audio echo occurring during the October 17, 2022 scheduled care. To correct this, JICA experts immediately contacted with the project coordinator and ICT staff, and held a video conference with them the following day to determine the cause and resolve the issue.

Another problem was reported on December 7, 2022, concerning one of the two UPSs loaned through the project coordinator. The following day, an online meeting was held with ICT staff to discuss the condition of the aforementioned UPS. After confirming the UPS problem with the manufacturer, JICA experts tried to resolve it, but was not successful, and it was determined that the failure was due to age deterioration. After discussing the matter with JICA, it was decided to leave the failed UPS with SIH and continue to provide scheduled care using the one working UPS. As mentioned above, the cooperation of ICT staff made it possible to quickly deal with the ICT equipment failure and seamlessly continue the scheduled care.

## 2.6 Outcomes of Activities

### 2.6.1 Achievement of Project Purpose

The table below shows the outputs of activities and the achievement status of the project purpose.

Table 2-16 Achievement of Objectively Verifiable Indicators
(December 2020 to February 2022 (preliminary survey), July 2022 to December 2022)

| Objectively Verifiable Indicators | Achievement |
|---|---|
| <Project Purpose> | |
| (1) Number of the ICU medical professionals in SIH (such as doctors, nurses, and ICT engineers) who have received remote training and D2D/N2N advice and consultation. | ・ On-demand online training: 2 physicians*<br>・ Real-time online training: 29 physicians, 33 nurses*<br>・ Remote conference: 8 physicians, 5 nurses*<br>・ Additional real-time online training: 32 nurses<br>・ Follow-up session: 9 physicians, 14 nurses<br>・ Scheduled care: 37 physicians, 61 nurses<br>・ Remote ICU system user training (for ICT engineers): 6*<br>・ Remote ICU telecommunication system user training (for physicians and nurses): 1 physicians, 11 nurses |
| (2) Number of patients treated by the ICU medical professionals in SIH who have received remote training and D2D/N2N advice and consultation. | ・ COVID-19 patients: 44<br>・ Non-COVID-19 patients: 178 |
| <Output 1> | |
| Number of remote trainings and D2D/N2N advice and consultation. | ・ Real-time online training: 7 sessions each for physicians and nurses*<br>・ Remote conference: one session each for physicians and nurses*<br>・ Scheduled care: 13 sessions (including 4 training sessions) for physicians,15 sessions for nurses<br>・ Additional real-time online training: 4 sessions for nurses<br>・ Follow-up session: two sessions each for physicians and nurses<br>・ Remote ICU system user training (for ICT engineers): 1 session*<br>・ Remote ICU telecommunication system user training (for physicians and nurses): 3 sessions |
| <Output 2> | |
| (1) Number of the ICU medical professionals in SIH (such as doctors, nurses, and ICT engineers) who have received remote training and D2D/N2N advice and consultation. | ・ On-demand online training: 2 physicians*<br>・ Real-time online training: 29 physicians, 33 nurses*<br>・ Remote conference: 8 physicians, 5 nurses*<br>・ Additional real-time online training: 32 nurses<br>・ Follow-up session: 9 physicians, 14 nurses<br>・ Scheduled care: 37 physicians, 61 nurses<br>[Target Value] 3 physicians per session, 6.6 nurses per session<br>[Achievement] 3.07 physicians per session, 5.1 nurses per session<br>・ Remote ICU system user training (for ICT engineers): 6*<br>・ Remote ICU telecommunication system user training (for physicians and nurses): 1 physicians, 11 nurses |
| (2) Number of clinical cases in which remote technical advises were provided. | [Target Value] one case per session each for physicians and nurses<br>[Achievement] Total 24 cases (physicians: 9 cases, nurses: 15 cases) |

| <Output 3> | |
|---|---|
| ICU telemedicine system has been installed and maintained functioning. | During the preliminary survey, a remote ICU telecommunication system was installed and tested in the SIH. JICA experts and ICT staff were present during scheduled care at the technical cooperation project phase to provide support for the system's use. Whenever a problem arose, it was discussed with an ICT staff who attempted to resolve it. |

* Already carried out as a pilot activity in the preliminary survey.

The activities of Output 1 were already carried out through a pilot activity in the preliminary survey. However, since the nurses who received real-time online training had left SIH, the hospital requested that current nurses receive additional real-time online training. Follow-up sessions for both physicians and nurses on themes requested as training were also held.

As for the activities of Output 2, although there were only a limited number of scheduled care sessions with ICU patients due to only a few patients being actually admitted, the remote ICU telecommunication system was used to provide effective medical support on those occasions. In addition, when there were no patients in the ICU, existing training materials were used to hold training sessions for physicians, while nurses were provided with advice and medical support using past cases. Although scheduled care was continued for approximately four months, the number of physicians and nurses who participated in scheduled care and training etc. set under PDM was achieved for physicians but fell short of the target value for nurses.

As for the activities of Output 3, committed efforts were made to maintain and manage the remote ICU telecommunication system introduced in the preliminary survey to effectively implement scheduled care in the Project. Although some equipment failed due to age-related deterioration near the end of the Project, immediate action was taken to ensure that scheduled care was not disrupted.

As previously stated, because the project period was only six months long, with actual activity accounting for only four months of that time, expecting to see the full benefits of training and scheduled care would be unrealistic. Although continuous educational support is required, especially for nurses, JICA experts were able to confirm changes as a result of this project's activities. Examples include nurses voluntarily reviewing and exchanging opinions after training and scheduled care, as well as incorporating physical assessments and scales that they had not previously used. The Project has generally achieved its purpose, which was that a "medical capacity of intensive care service in SIH is strengthened in order to administrate and treat critically ill patients affected by COVID-19 and other diseases."

### 2.6.2 Achievement of Operational Performance Indicators

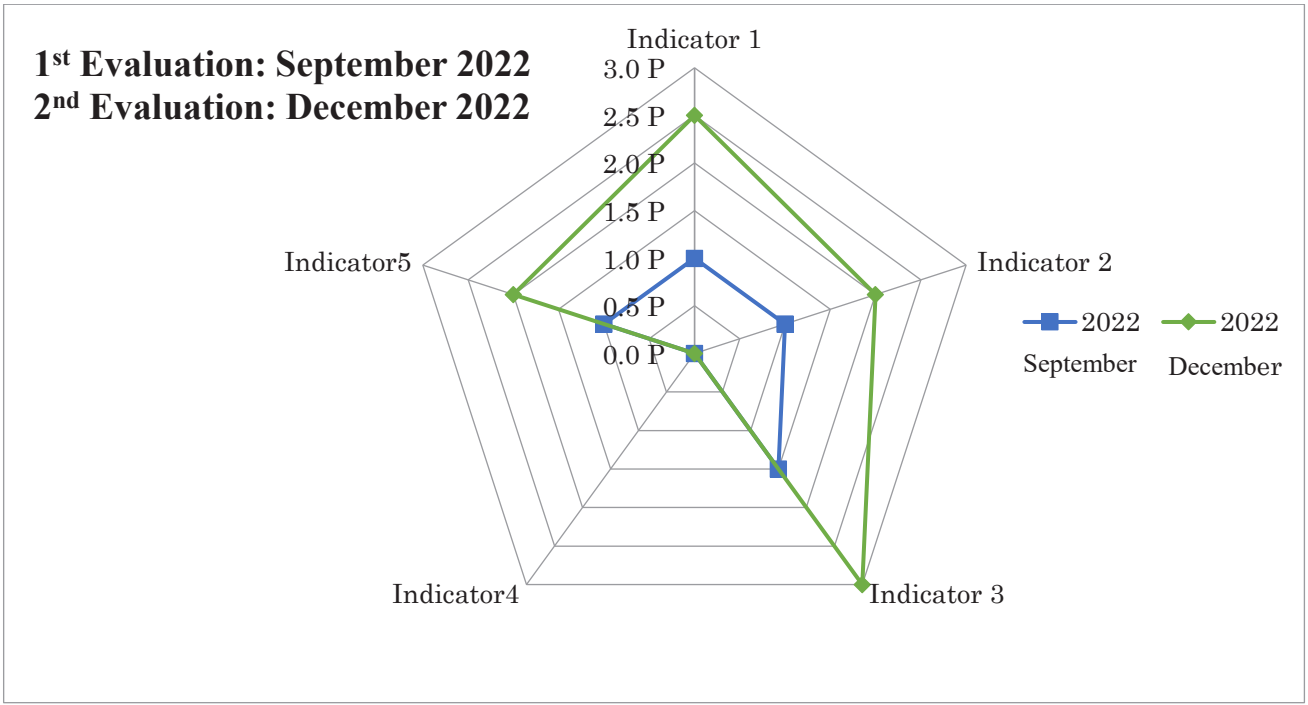
The first OPIs evaluation for activities through the end of September 2022 was conducted one month after the start of scheduled care, and the final evaluation was conducted in December. The results are shown below. As there were no ICU patients available during the first evaluation, and scheduled care dealt with past cases, there was no opportunity to use the remote ICU telecommunication system. This resulted in poor evaluations from both sides. From mid-October to early November, however, scheduled care was provided for patients admitted to the ICU, there were more opportunities to use the remote ICU telecommunication system, and patient information could be shared quickly and appropriately with the Japanese side. As a result, valuations were higher than in the first round. Because the number of ICU patients again decreased from mid-November, the physicians were given training sessions, while the nurses were given scheduled care using past cases. That being said, there were limited opportunities to provide medical support using actual patients during the project period.

Table 2-17 Evaluation by Operational Performance Indicators

| Operational Performance Indicators | Description | September, 2022 | | | December, 2022 | | |
|---|---|---|---|---|---|---|---|
| | | SIH Self-evaluation 0 or 1 | JICA Experts 0 or 1 | Average | SIH Self-evaluation 0 or 1 | JICA Experts 0 or 1 | Average |
| Indicator 1. Medical doctors are able to use the | Medical doctors are able to understand the usage of remote ICU telecommunication system and share the appropriate information to the Project Experts | 0.0 | 0.0 | 1.0 | 1.0 | 1.0 | 2.5 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| remote technologies and conduct the medical treatment with quality | (doctors) by using the equipment. | | | | | | |
| | Medical doctors are able to use the remote ICU telecommunication system and communicate clearly online the situation of patients. | 1.0 | 0.0 | | 1.0 | 1.0 | |
| | Medical doctors are able to make use of the advice of Project Experts for the real treatment. | 0.0 | 1.0 | | 1.0 | 0.0 | |
| Indicator 2. Nurses are able to use the remote technologies and conduct the nursing with quality | Nurses are able to understand the usage of remote ICU telecommunication system and share the appropriate information to the Project Experts (nurses) by using the equipment. | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 2.0 |
| | Nurses are able to use the remote ICU telecommunication system and communicate the situation of patients clearly. | 0.0 | 0.0 | | 1.0 | 1.0 | |
| | Nurses are able to utilize the expertise/knowledge of the Project Experts for safe nursing care according to the situation on site. | 1.0 | 0.0 | | 0.0 | 0.0 | |
| Indicator 3. The hospital can make use of the remote ICU telecommunication system effectively | The hospital staff listed as the counterparts in the Monitoring sheet are able to understand the introduced remote ICU telecommunication system. | 1.0 | 1.0 | 1.5 | 1.0 | 1.0 | 3.0 |
| | The hospital staff listed as the counterparts in the Monitoring sheet are able to make use of the introduced remote ICU telecommunication system. | 0.0 | 0.0 | | 1.0 | 1.0 | |
| | The hospital has the system to be able to respond appropriately to the troubles of the equipment of the introduced remote ICU telecommunication system. | 1.0 | 0.0 | | 1.0 | 1.0 | |
| Indicator 4. The hospital can add the ICU medical equipment and install the facilities and make use of them effectively as the institution (after the installation of the equipment and facilities) | Medical staff can use and control safely and correctly the introduced medical equipment. | - | - | - | - | - | - |
| | The hospital has the system of operating the introduced medical equipment and facilities as the institution. | - | - | | - | - | |
| | The hospital is able to implement the routine maintenance of the introduced medical equipment and facilities as the institution. | - | - | | - | - | |
| Indicator 5. The hospital can use the remote ICU service | The hospital directors and staff have the correct knowledge and understanding of the remote ICU service as the institution. | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 2.0 |
| | The hospital directors and staff are able to use appropriately the remote ICU service | 0.0 | 0.0 | | 1.0 | 1.0 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| effectively as the institution | as the institution. | | | | | | |
| | The Project stakeholders such as the Ministry of Health share the knowledge on the remote ICU service. | - | - | | - | - | |
| Average of each Indicator (3 = Full marks) | | 0.55 P | 0.27 P | 1.13 P | 0.91 P | 1.80 P | 2.10 P |



# Chapter 3 Evaluation of Project Activities, Operational Issues and Recommendations

## 3.1 Evaluation of Activities

### 3.1.1 Relevance

The Project is judged highly relevant from the following perspectives:

○ **Relevance to Development Policies**

Bangladesh has set a policy goal of becoming a middle-income country. To that end, the government has established its 7th Five-Year Plan (2016‐2020), which prioritizes "GDP growth acceleration, employment generation and rapid poverty reduction," "a broad-based strategy of inclusiveness with a view to empowering every citizen to participate full and benefit from the development process," and "a sustainable development pathway that is resilient to disaster and climate change; entails sustainable use of natural resources; and successfully manages the inevitable urbanization transition." To support Bangladesh's goal of economic growth and poverty reduction through "sustainable and equitable economic growth," Japan has been supporting efforts to eliminate social vulnerabilities while increasing economic activity. Furthermore, in order to help Bangladesh become a middle-income country, efforts are being made to maintain a high growth rate while also committing to Sustainable Development Goals (SDGs) such as poverty, hunger, education, health, gender, water, and sanitation. Among these, in the area of health, strengthening the health system to achieve UHC has emerged as an issue, and there is an urgent need to develop medical personnel with a focus on infectious disease control due to the impact of COVID-19, which has re-exposed the vulnerability of the country's medical system. In view of these points, the Project is judged highly relevant to the country's development policy.

○ **Relevance to Needs**

Since the first infection was confirmed in Bangladesh in March 2020, the total number of coronavirus-infected people has reached 2,037,000, with 29,000 deaths (as of December 22, 2022, WHO), with two major peaks of 16,230 on July 28, 2021 and 15,807 on January 27, 2022. Since March, the number has declined from a few dozen to a few hundred.

As a designated COVID-19 hospital, SIH has been treating COVID-19 patients ranging in severity from mild to severe since May 7, 2020, at the request of MOHFW. However, because SIH has only one intensivist, the other physicians provide outpatient care, and they are all relatively young and inexperienced, the Project, whose goal is to provide training to intensivists and build capacity for providing medical services, is consistent with the hospital's needs and judged to be highly relevant.

### 3.1.2 Coherence

The Project is judged to be highly coherent.

The goal of the Country Assistance Policy is to realize UHC and human security, which is congruent with Goal 3 of the SDGs (Health and Well-Being), and given the efforts to strengthen the health system through yen loan and private sector cooperation, the Project is judged to be coherent with the Country Assistance Policy.

With regard to the Japanese government and JICA's response policy to the COVID-19 pandemic, in September 2020, the Prime Minister (at the time) Suga spoke at the United Nations General Assembly, making it clear that (1) based on the guiding principle of human security, Japan's stance is to "leave no one's health behind" in working towards the achievement of UHC, (2) Japan intends to develop therapeutic drugs, vaccines, and diagnostics, and ensure fair access, including to developing countries, and (3) Japan plans to focus efforts on enhancing health and medical systems in developing countries while also strengthening the healthcare systems of various countries by providing equipment, building human capacity, etc. This demonstrates Japan's broad range of cooperation activities, which include emergency assistance via yen loan and grant aid, support for the development of health and medical systems, and vaccine distribution. The Project, positioned as one of Japan's COVID-19 responses, aims to strengthen clinical support and intensive care services for severely ill COVID-19 patients.

As a response to COVID-19, in July 2020, JICA launched the "JICA's Initiative for Global Health and Medicine," which is composed of three components: (1) strengthening systems for diagnosing and treating infectious diseases; (2) strengthening systems for research and early warning of infectious diseases; and (3) strengthening infectious disease prevention and mainstreaming health crisis responses. This project is positioned as one of the core initiatives in (1) strengthening treatment systems, and it is coherent with the aid policies of Japan and JICA.

### 3.1.3 Effectiveness

There are some issues concerning the effectiveness of the Project.

The Project was established as an emergency response project as a measure against the COVID-19 pandemic, with the goal of providing immediate medical assistance to critically ill patients. As a result, online training and remote conferences were conducted in the preliminary survey of the pilot activity, and the core activity, scheduled care, was implemented in the technical cooperation phase. However, as many of the nurses had left their positions by the beginning of the technical cooperation phase., additional nurse training (in the form of real-time online training) was provided once more. Based on PDM indicators, the following quantitative effects were achieved: Output 1's main activity, online training, was attended by 29 physicians, 33 nurses, and 32 nurses (cumulative) participated in the additional training; Output 2's scheduled care was attended by 37 physicians and 61 nurses. (all cumulative). Furthermore, these medical professionals treated 222 patients (44 COVID-19 ICU inpatients and 178 general ICU patients). As for the number of participants in the Project's scheduled care, training, and follow-up sessions, the average number of physicians was 3.07 per session, while the average number of nurses was 5.1 per session, which shows that that of nurses fell short of the Project's target values of 3 physicians and 6.6 nurses. The reasons for this included fewer nurses working in the ICU due to nurses leaving for government hospitals with more generous employee benefits, nurses leaving their job to work overseas, as well as some nurses being unable to participate in training due to their duties.

### 3.1.4 Efficiency

There are some issues concerning the efficiency of the Project.

The remote ICU telecommunication system procured and installed in the preliminary survey was used to provide scheduled care in the Project. However, many of the nurses who participated in the preliminary survey training had left their jobs, prompting the decision to re-deliver the training for newly hired nurses at SIH's request on short notice. Because the Project was only 6 months long, scheduled care and training were carried out concurrently, and topics not covered in the existing training modules were covered in follow-up sessions, allowing a full range of intensive care activities to be conducted despite the short timeframe. Although the necessary activities were completed on time, it is believed that more efficient knowledge and experience accumulation would have been possible if SIH staff had continued their employment there.

### 3.1.5 Impact

Impact of the Project is judged to be moderate.

Given the scarcity of intensivists in Bangladesh and the fact that SIH has only one specialist, it is fair to say that training specialists and nurses is a pressing issue. In a strict sense, the number of times that scheduled care was implemented was limited due to the lack of admitted ICU patients. Nevertheless, the Japanese experts were able to directly provide knowledge, advice, and guidance on intensive care, which facilitated significant learning for the C/P, and in some cases, efficiency was even reported to have been improved specifically by utilizing the knowledge learned in patient treatment. Nurses, in particular, were able to improve their knowledge and skills by performing on-the-spot physical assessments they learned through scheduled care, which they had not previously done. Knowledge was also shared with a diverse group of people involved in the Project, as physicians and nurses from other departments, including emergency departments and surgical units, attended as observers. Although the timeline for cooperation activities was short, it was clear that participants were eager to administer critical care based on the remote ICU training, and it is hoped that hospital-initiated study sessions

and such will be continued by the C/P in the future. Although it is a prerequisite for continued employment, the continuation of such activities would help to pave the way for the overall goal: “Medical care service system is established in SIH in order to administrate and treat critically ill patients affected by COVID-19 and other infectious diseases”.

### 3.1.6 Sustainability

The sustainability of the Project is judged to be somewhat low.

Despite the brevity of the Project, scheduled care-centered activities were carried out, and it is believed that the Project contributed in terms of knowledge and skills. On the other hand, the low retention rate of physicians and nurses is the most significant obstacle to future sustainability. Because SIH is a newer hospital, having opened in June of this year, it is expected that the hospital's surrounding environment, including accessibility, will improve, and it is hoped that the increased revenue from this will contribute to the retention of medical professionals. A cardiovascular surgery ICU is also scheduled to open on February 1, 2023, which will further increase the importance of intensive care. It is hoped that the intensive care experience will be maintained and expanded in order to gain recognition as a medical institution of global standards in Bangladesh.

## 3.2 Issues and Lessons Learned Through Activities

**(1) Counterpart Staff Turnover and Training**

In the preliminary survey, basic training to acquire the fundamental knowledge for remote ICU support, as well as remote conferences to understand the actual situation of SIH through case studies, were implemented, and the Project was anticipated to primarily implement scheduled care, which is medical support delivered via a remote ICU telecommunication system. However, many of the nurses who participated in the preliminary survey training had left their jobs, prompting the decision to re-deliver four training sessions for newly hired nurses via real-time online training at SIH's request on short notice. It was also decided to deliver themes not covered in the existing training modules as follow-up sessions, and to prepare additional teaching materials to provide as much educational support as possible. However, the training content was delivered using pre-existing training modules and was not tailored to the C/P's readiness, which may have made understanding some of the information difficult for young nurses with limited experience and language skills.

Participant changes also occurred among physicians during the project period due to staff turnover and transfers. Newly appointed physicians were encouraged to participate in scheduled care, and despite the participant turnover, the Project were able to maintain a certain level of consistency, with seven physicians attending at least four times. Nevertheless, due to participant turnover, the Project came to a close just when participants were getting a good grasp on intensive care in terms of knowledge and experience. The low retention rate of medical professionals at SIH and short duration of the Project undoubtedly hampered the realization of effective support, and both of these factors would need to be improved if the educational aspect of the Project is to be emphasized.

**(2) Decrease in ICU admissions**

Due to the low number of ICU patients admitted since scheduled care began, it was implemented using past cases. However, this led to some physicians voicing concerns that selecting appropriate cases and preparing presentations for scheduled care were time-consuming and burdensome for the person responsible. To address this, after consulting with SIH, it was decided that if there is an inpatient in the ICU who is eligible to be used as a case on the day of scheduled care, only the minimum necessary information, such as the disease name, would be shared with the Japanese side in advance, and any other patient information would be shared with the Japanese side during scheduled care via the remote ICU telecommunication system. In fact, it was possible to provide scheduled care to hospitalized patients each week from mid-October to early November. At these times, patient information was shared with the Japanese side during scheduled care using ICT equipment such as IP cameras and a document scanner without advance preparation, on the basis of which discussions on patient care and management were held by Japanese intensivists who offered advice and recommendations. It was decided that, when ICU inpatients were not available, training sessions on topics tailored to SIH needs would be held instead of scheduled care using the existing training modules. This approach reduced the burden on SIH

physicians, and the training sessions were well received by participants as excellent opportunities to review basic knowledge and learn about Japanese medical practices.

Similarly with nurses, it was decided that scheduled care would be implemented when patients were admitted to the ICU on the day of scheduled care, that only the bare minimum of information would be shared beforehand, and that the remote ICU telecommunication system would be used for the scheduled care. In fact, only a limited number of scheduled care sessions with admitted patients were held; however, using previous cases facilitated the acquisition of significant knowledge that nurses can use in future nursing care by encouraging discussion on what nurses should observe about patients, what approaches to employ, and how to best provide nursing care.

As described above, the originally intended scheduled care was limited due to a decrease or absence of ICU inpatients, and the goal of medical support was only partially met, but it is fair to say that the training sessions and use of past cases had a significant educational effect.

### 3.3 Recommendations to SIH

In order to promote broad awareness of the outputs achieved through the Project and improve the quality of intensive care, JICA experts would like to make the following recommendations:

(1) To further develop the intensive care capacity of SIH, JICA experts recommend the continued use of training materials provided in the Project, particularly by the C/P, to improve knowledge and skills in the field of intensive care.

(2) JICA experts would like SIH to take the necessary measures to improve the retention rate of its medical professionals. JICA experts believe that improving staff retention will not only improve the effectiveness of human resource development at the hospital but will also contribute to the overall goal of the Project, which is to strengthen SIH's medical system for the treatment and management of critically ill patients.

# APPENDIX

1. List of JICA Experts
2. Training Materials for ICT Equipment Operation
3. PDM & PO
4. Monitoring Sheet ver. 0 &ver. 1
5. Work Plan
6. Minutes of JCC Meetings

# Appendix 1: List of JICA Experts

| | Title | Name | Company |
|---|---|---|---|
| 1 | Team Leader/ Remote ICU Services Planning | Mr. Hiroaki Nakagawa | C.D.C. International Cooperation |
| 2 | Remote Intensive Care 1 / Remote ICU Planning 1 / Doctor | Dr. Yoshihiko Konoike | T-ICU Co., Ltd. |
| 3 | Remote Intensive Care 2 / Remote ICU Planning 2 / Nurse 1 | Mr. Shingo Moriguchi | T-ICU Co., Ltd. |
| 4 | Remote Intensive Care 3 / Remote ICU Planning 3 / Nurse 2 | Mr. Kenji Ichimura | T-ICU Co., Ltd. |
| 5 | Teaching Materials / Public Relations 1 | Ms. Ayako Nakazato | C.D.C. International Cooperation |
| 6 | Remote ICU Telecommunication System | Mr. Yuji Takada | C.D.C. International Cooperation |
| 7 | Remote ICU Management | Ms. Kaniz Fatema | T-ICU Co., Ltd. |
| 8 | Regional Director for Asia-Pacific / Monitoring | Mr. Shuji Tokumaru | C.D.C. International Cooperation |
| 9 | Remote ICU Service Management / Public Relations 2 | Ms. Fuki Fujiwara | C.D.C. International Cooperation |

# Appendix 2: Training Materials for ICT Equipment Operation

# How to operate ICT equipment

C.D.C. International

Offline PC
(Monitoring PC)

- Monitoring ICU using IP camera
- Control HDMI Capture board

Online PC
(Communication PC)

- Connect Zoom meeting
- Using Document Scanner

Your PC
(for Electrical Medical Record)

- EMR

# Contents

- Introduction
- Explanation of Communication (Online) System Operation
  - Microphone Speaker Button
  - Document Scanner Button
  - Application of Communication PC
- Explanation of Monitoring (Offline) System Operation
  - Control of IP Camera
  - Application of Monitoring PC
- Q&A

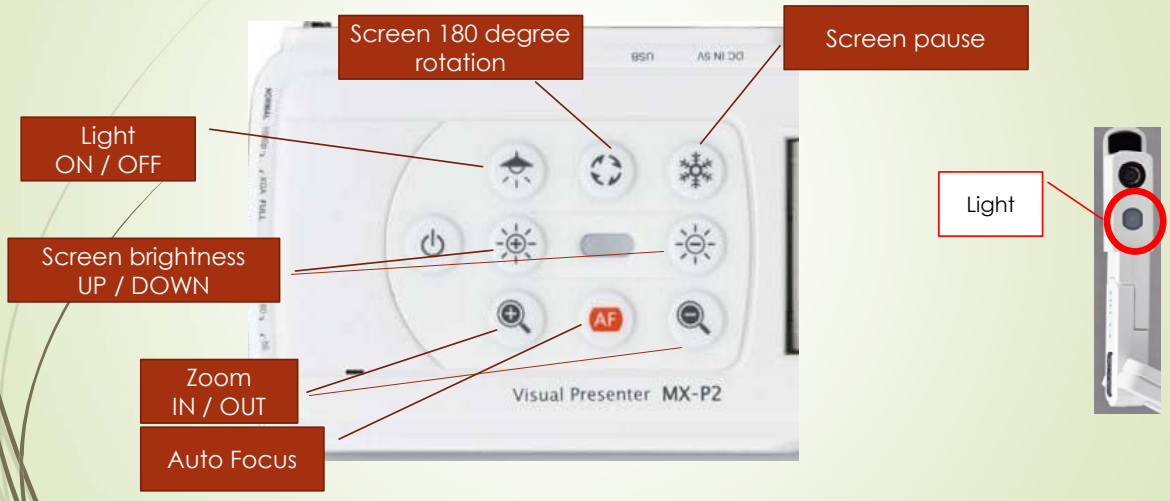
# Introduction

- If you have any questions, please cut in and ask us.
- I will not explain one-sidedly, but will proceed with practice.
- Please note the following points when operating the equipment.
  - Please practice operating the equipment when you have free time to familiarize yourself with the equipment. However, do not change or delete the configured network information or IP camera settings.
  - Do not place the Document Scanner, which has magnetic, on a PC or NAS that has a built-in HDD.
  - When Scheduled Care finishes, you might want to turn the power off. However, please shut down the PC only. Please leave all other equipment turned on.
  - If any problems arise, please contact the hospital's ICT staff first.

## Explanation of Communication (Online) System Operation (Microphone Speaker Button)


## Explanation of Communication (Online) System Operation (Document Scanner)

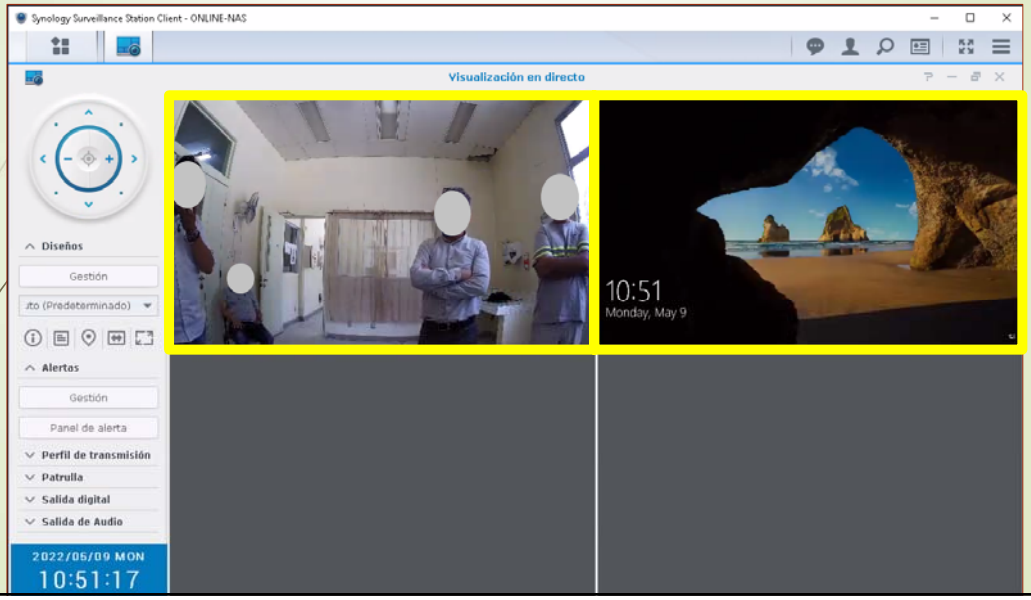
## Explanation of Communication (Online) System Operation (Document Scanner)



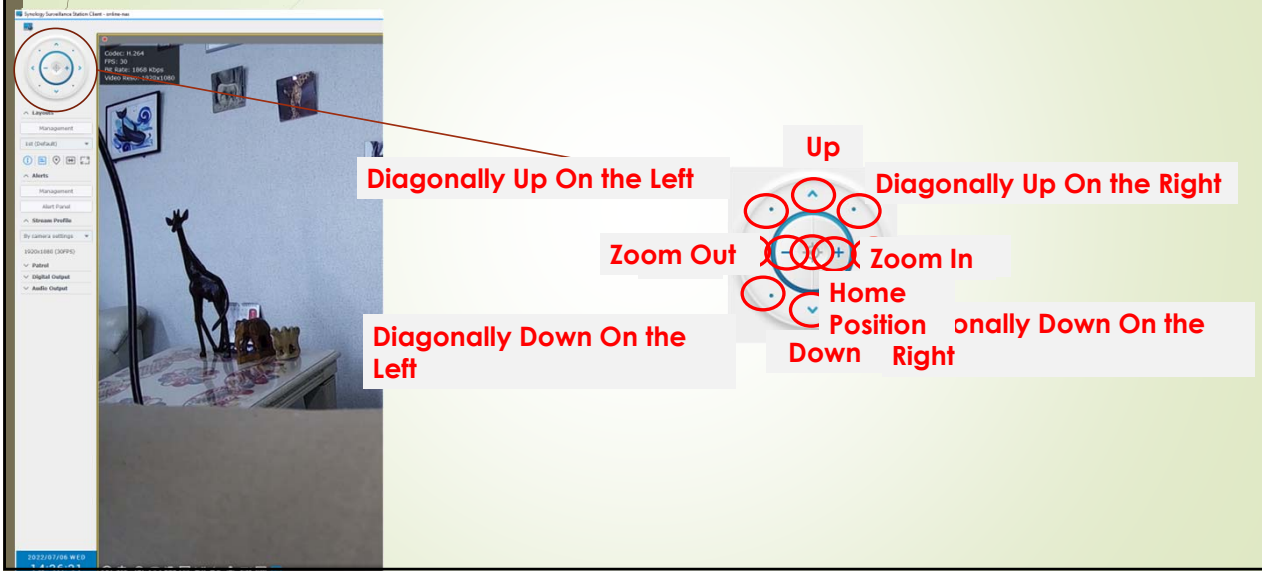

## Explanation of Communication (Online) System Operation (Document Scanner)

Click this app for using Document Scanner

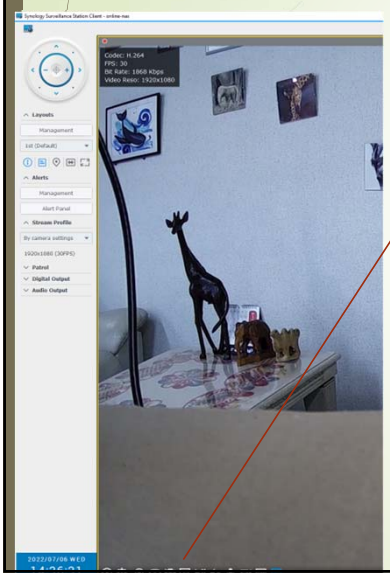
## Explanation of Communication (Online) System Operation (Application of Communication PC)




## Explanation of Monitoring (Offline) System Operation (Application of Communication PC)



## Explanation of Monitoring (Offline) System Operation (Application of Communication PC)



Zoom In / Out

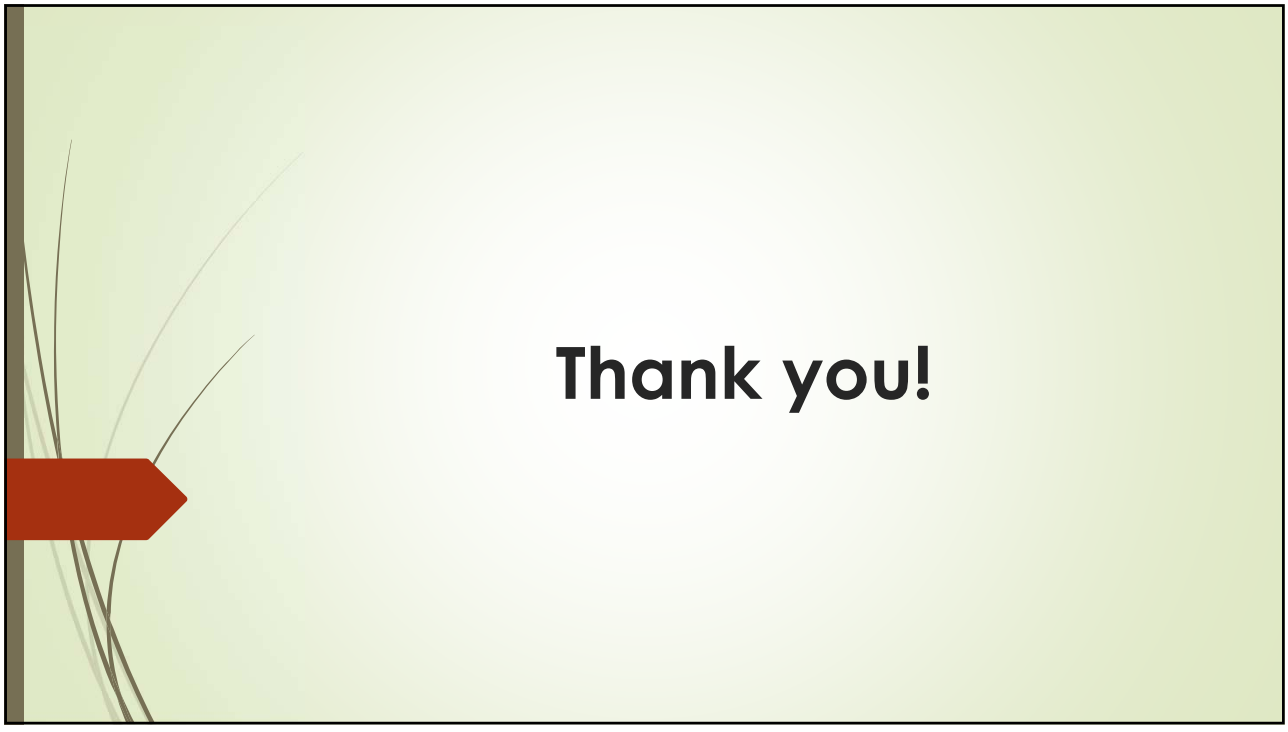
Mic On / Off

IP Camera's volume Control

## Explanation of Communication (Online) System Operation (Application of Communication PC)

Click this app for using IP Camera


Q&A


Thank you!

# Appendix 3: PDM & PO

# Project Design Matrix

**Project Title: Project for Capacity Development of ICU Using Telemedicine under COVID-19 Pandemic**
**Counterpart Organization: Ship International Hospital (SIH)**
**Beneficiary: Medical professionals in SIH**
**Period of Project: July 2022 - December 2022**
**Project Site: Dahaka, Bangladesh**

**Version 0**
**Dated July 29, 2022**

| Project Narrative | Objectively Verifiable Indicators | Means of Verification | Important Assumption | Achievement | Remarks |
|---|---|---|---|---|---|
| **Overall Goal** | | | | | |
| Medical care service system is established in SIH in order to administrate and treat critically ill patients affected by COVID-19 and other infectioius diseases. | The medical service of ICU strengthened by the Project is continued and maintained. | Interview to SIH | | | |
| **Project Purpose** | | | | | |
| Medical capacity of intensive care services in SIH is strengthened in order to administrate and treat critically ill patients affected by COVID-19 and other diseases. | (1) Number of the ICU medical professionals in SIH (such asdoctors, nurses and ICT engineers) who have received remote training and D2D/N2N advice and consultation. | Data of SIH | (1) The COVID-19 pandemic does not fully cease in Bangladesh.<br>(2) SIH continues to accept the COVID-19 patients.<br>(3) Resources of SIH for ICU including the medical professionals are under pressure. | (1) Number of medical professionals who took "the on-demand online training": 2<br>Nnumber of medial professionals who participated in "the real-time online training": 29 doctors, 33 nurses<br>Number of madical professionals who participated in remote conference: 8 doctors, 5 nurses<br>Number of medical professionals who participated in scheduled care: 3 doctors, 3 nurses<br>In addition, 6 ICTpersonnel attended training on telecommunication systems. | |
| | (2) Number of patients treated by the ICU medical professionals in SIH who have received remote training and D2D/N2N adviceand consultation. | | | (2) Number of patients treated: 148 (44 COVID-19 ICU patients and 104 Non COVID-19 ICU patients) | |
| **Outputs** | | | | | |
| (1) Medical professionals (including doctors and nurses) in SIH understand the basics on intensive care and the functions of ICU telemedicine system, and are ready to receive remote D2D/N2N technical advice and support. | Number of remote trainings and D2D/N2N advice andconsultation. | Record of online real-time and self-learning trainings, and D2D/N2N adviceand consultation | | (1) Held 14 'real time on-line training' sessions in total: for doctors, 7 sessions and for nurses, 7 sessions.<br>Held 2 remote conferences in total: for doctors, 1 session, and for nurses, 1 session.<br>Held 2 sessions of scheduled care in total: for doctors, 1 session, and for nurses 1 session.<br>Two doctors took 'on-demand training course'. | |
| (2) Capacity of medical professionals is enhanced throuhg remote trainings and D2D/N2N technical advice and consultations conducted by the JICA expert team including certified critical care physicians and nurses. | (1) Number of the ICU medical professionals in SIH (such asdoctors, nurses and ICT engineers) who have received remote training and D2D/N2N advice and consultation. | Record of training and D2D/N2N advice and consultation | | (1) Same as Achivement (1) of Project Purpose | |
| | (2) Number of clinical cases in which remote technical advises were provided. | | | (2) Provided for 2 cases in the sessions of scheduled care for doctors (1) and for nurses (1). | |
| (3) The environment of SIH including the remote-ICU telecommunication system is maintained in order to make good use of remote D2D/N2N trainings and technical advice. | ICU telemedicine system has been installed and maintained functioning. | Daily communication with relate to the use of ICU telemedicine system, and periodical site observation at SIH | | ICU telemedicine system has been installed since the preliminary survey, and is confirmed to be functioning through the operation check. | |

| Activities | Inputs | | Important Assumption | Pre-Conditions |
|---|---|---|---|---|
| | JICA Input | SIH Input | | |
| (1) In SIH, follow-up sessions on medical matters regarding intensive cares (including diagnosis and treatment of infectious diseases) and basic operational techniques of the ICU telemedicine system are conducted on remote basis by a team of Japanese doctors and nurse specialized in intensive care in order to support the trainings conducted during the preliminary survey. | Remote trainings, seminars, and workshops on the basic technique and knowledge for intensive care and COVID-19 pandemic for theSIH medical professionals, and on the use of ICU telemedicine system for SIH medical engineers. | Assignment of appropriate and a sufficient number of medical professionals and engineers in SIH to effectively implement the Project. | (1) JICA maintains as a shareholder of SIH through SAMSL.<br>(2) SIH sustains its business andmaintains the intensive care operation.<br>(3) SIH continuously admits COVID-19 patients and critically illpatients.<br>(4) SIH continuously recruits capable medical professionals in the intensive care operation, so that there are sufficient number of medical professionals who can gain benefit fromthe project activities.<br>(5) Utilities to SIH such as electricity and internet connection are sustainably and stably provided.<br>(6) The Government of Bangladesh or any competent authority does not consider the ICU telemedicine services from Japan as violation of any domestic lega lframework. | (1) Assignment of medica professionals to treat critically illpatients.<br>(2) Acceptance of critically ill patients at the target hospital.<br>(3) Provision of the broadband access to the internet.<br>(4) Undertakings such as use o fequipment, maintenance, and budget support for utilities. |
| | | | | **Issues and countermeasures** |
| (2) Capacity building through D2D/N2N technical advice and scheduled care for is provided remotely by Japanese intensivists and nurses. | D2D/N2N remote advices and consultations provided by the Japanese medical professionals specialized in intensive care (certified critical care physicians and nurses) together with a capacity development program for the SIH medical professionals. | Provision of information of critically ill patients' cases, possibly affected by COVID-19. | | |
| (3) Introduction of the remote-ICU telecommunication system is confirmed and maintained. | Provision of the ICU telemedicine system. | Provision of basic utilities (electricity,internet connection, etc.) and spaces to manage the ICU D2D telemedicine system and other new measures. | | |

## Tentative Plan of Operation

**Version 0**

**Date: July 29, 2022**

**Project Title: Project for Capacity Development of ICU Using Telemedicine under COVID-19 Pande**

| **Inputs** | Year | Ⅲ | | | Ⅳ | | | Remarks | Monitoring: Issue | Monitoring: Solution |
|---|---|---|---|---|---|---|---|---|---|---|
| | Month | 7 | 8 | 9 | 10 | 11 | 12 | | | |
| **Expert** | | | | | | | | | | |
| Chief Advisor | Plan | | | | | | | Inputs from these experts will be shared with other countries | | |
| | Actual | | | | | | | | | |
| ICU Specialized Doctor | Plan | | | | | | | | | |
| | Actual | | | | | | | | | |
| ICU Specialized Nurse | Plan | | | | | | | | | |
| | Actual | | | | | | | | | |
| Other short-term experts such as ICT engineers | Plan | | | | | | | | | |
| | Actual | | | | | | | | | |

| **Activities** / **Sub-Activities** | Year | Ⅲ | | | Ⅳ | | | Responsible Organization: **Japan** | Responsible Organization: **SIH** | Achievements | Issue & Countermeasures |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Month | 7 | 8 | 9 | 10 | 11 | 12 | | | | |
| **Output 1: Medical professionals (including doctors and nurses) in SIH understand the basics on intensive care and the fuctions of ICU telemedicine system, and are ready to receive remote D2D/N2N technical advice and support.** | | | | | | | | | | | |
| 1.1 Implement follow-up session. | Plan | | | | | | | JICA | SIH | | |
| | Actual | | | | | | | | | | |
| 1.2 Provision of training materials. | Plan | | | | | | | | | | |
| | Actual | | | | | | | | | | |
| **Output 2: Capacity of medical professionals is enhanced throuhg remote D2D/N2N technical advices and consultations conducted by JICA expert team including certified critical care physicians and nurses.** | | | | | | | | | | | |
| 2.1 Implement scheduled care | Plan | | | | | | | JICA | SIH | | |
| | Actual | | | | | | | | | | |
| 2.2 Monitor remote ICU service | Plan | | | | | | | | | | |
| | Actual | | | | | | | | | | |
| **Output 3: The environment of SIH including the remote-ICU telecommunication system is maintained in order to make good use of remote D2D/N2N trainings and technical advice.** | | | | | | | | | | | |
| 3.1 Operation Check and Technical Support of Remote ICU Telecommunication System | Plan | | | | | | | JICA | SIH | | |
| | Actual | | | | | | | | | | |
| **Duration / Phasing** | Plan | | | | | | | | | | |
| | Actual | | | | | | | | | | |

| **Monitoring Plan** | Year | Ⅲ | | | Ⅳ | | | Remarks | Issue | Solution |
|---|---|---|---|---|---|---|---|---|---|---|
| | Month | 7 | 8 | 9 | 10 | 11 | 12 | | | |
| **Monitoring** | | | | | | | | | | |
| **Joint Coordinating Committee** | Plan | | | | | | | JCC will be held additionally if need. | | |
| | Actual | | | | | | | | | |
| **Submission of Monitoring Sheet** | Plan | | | | | | | | | |
| | Actual | | | | | | | | | |
| **Reports/Documents** | | | | | | | | | | |
| **Project Completion Report** | Plan | | | | | | | Tentative | | |
| | Actual | | | | | | | | | |
| **Public Relations** | | | | | | | | | | |
| **Operation of Project web page** | Plan | | | | | | | Together with other countries | | |
| | Actual | | | | | | | | | |

# Project Design Matrix

**Project Title: Project for Capacity Development of ICU Using Telemedicine under COVID-19 Pandemic**
**Counterpart Organization: Ship International Hospital (SIH)**
**Beneficiary: Medical professionals in SIH**
**Period of Project: July 2022 - December 2022**
**Project Site: Dahaka, Bangladesh**

**Version 1**
**Dated November 15, 2022**

| Project Narrative | Objectively Verifiable Indicators | Means of Verification | Important Assumption | Achievement | Remarks |
|---|---|---|---|---|---|
| **Overall Goal** | | | | | |
| Medical care service system is established in SIH in order to administrate and treat critically ill patients affected by COVID-19 and other infectioius diseases. | The medical service of ICU strengthened by the Project is continued and maintained. | Interview to SIH | | | |
| **Project Purpose** | | | | | |
| Medical capacity of intensive care services in SIH is strengthened in order to administrate and treat critically ill patients affected by COVID-19 and other diseases. | (1) Number of the ICU medical professionals in SIH (such asdoctors, nurses and ICT engineers) who have received remote training and D2D/N2N advice and consultation. | Data of SIH | (1) The COVID-19 pandemic does not fully cease in Bangladesh.<br>(2) SIH continues to accept the COVID-19 patients.<br>(3) Resources of SIH for ICU including the medical professionals are under pressure. | (1) Number of medical professionals who took "the on-demand online training": 2<br>Nnumber of medial professionals who participated in "the real-time online training": 29 doctors, 33 nurses<br>Nnumber of medial professionals who participated in "the real-time online training" as additional training: 11 nurses<br>Number of madical professionals who participated in "remote conference": 8 doctors, 5 nurses<br>Number of medical professionals who participated in "scheduled care": 25 doctors, 33 nurses<br>In addition, 6 ICTpersonnel attended training on telecommunication systems.<br>11 nurses and 1 doctor participated in the remote ICU telecommunication system user training. | |
| | (2) Number of patients treated by the ICU medical professionals in SIH who have received remote training and D2D/N2N adviceand consultation. | | | (2) Number of patients treated: 177 (44 COVID-19 ICU patients and 133 Non COVID-19 ICU patients) | |
| **Outputs** | | | | | |
| (1) Medical professionals (including doctors and nurses) in SIH understand the basics on intensive care and the functions of ICU telemedicine system, and are ready to receive remote D2D/N2N technical advice and support. | Number of remote trainings and D2D/N2N advice and consultation. | Record of online real-time and self-learning trainings, and D2D/N2N adviceand consultation | | (1) Held 14 "real time online training" sessions in total: for doctors, 7 sessions and for nurses, 7 sessions.<br>Held 4 "real time online training" sessions in total as additional training for nurses.<br>Held 2 "remote conferences" in total: for doctors, 1 session, and for nurses, 1 session.<br>Held 17 sessions of "scheduled care" in total: for doctors, 8 session, and for nurses 9 session.<br>Two doctors took "on-demand training course".<br>Held 1 session of "remote ICU system user training" for ICT engineers.<br>Held 3 sessions of "remote ICU telecommunication system user training" for doctors and nurses. | |
| (2) Capacity of medical professionals is enhanced throuhg remote trainings and D2D/N2N technical advice and consultations conducted by the JICA expert team including certified critical care physicians and nurses. | (1) Number of the ICU medical professionals in SIH (such asdoctors, nurses and ICT engineers) who have received remote training and D2D/N2N advice and consultation. | Record of training and D2D/N2N advice and consultation | | (1) Same as Achivement (1) of Project Purpose | |
| | (2) Number of clinical cases in which remote technical advises were provided. | | | (2) Provided for 19 cases in the sessions of scheduled care for doctors (9) and for nurses (10). | |
| (3) The environment of SIH including the remote-ICU telecommunication system is maintained in order to make good use of remote D2D/N2N trainings and technical advice. | ICU telemedicine system has been installed and maintained functioning. | Daily communication with relate to the use of ICU telemedicine system, and periodical site observation at SIH | | ICU telemedicine system has been installed since the preliminary survey, and confirmed to be functioning through the operation check. | |

| Activities | Inputs | | Important Assumption | Pre-Conditions |
|---|---|---|---|---|
| | JICA Input | SIH Input | | |
| (1) In SIH, follow-up sessions on medical matters regarding intensive cares (including diagnosis and treatment of infectious diseases) and basic operational techniques of the ICU telemedicine system are conducted on remote basis by a team of Japanese doctors and nurse specialized in intensive care in order to support the trainings conducted during the preliminary survey. | Remote trainings, seminars, and workshops on the basic technique and knowledge for intensive care and COVID-19 pandemic for theSIH medical professionals, and on the use of ICU telemedicine system for SIH medical engineers. | Assignment of appropriate and a sufficient number of medical professionals and engineers in SIH to effectively implement the Project. | (1) JICA maintains as a shareholder of SIH through SAMSL.<br>(2) SIH sustains its business andmaintains the intensive care operation.<br>(3) SIH continuously admits COVID-19 patients and critically illpatients.<br>(4) SIH continuously recruits capable medical professionals in the intensive care operation, so that there are sufficient number of medical professionals who can gain benefit fromthe project activities.<br>(5) Utilities to SIH such as electricity and internet connection are sustainably and stably provided.<br>(6) The Government of Bangladesh or any competent authority does not consider the ICU telemedicine services from Japan as violation of any domestic lega lframework. | (1) Assignment of medica professionals to treat critically illpatients.<br>(2) Acceptance of critically ill patients at the target hospital.<br>(3) Provision of the broadband access to the internet.<br>(4) Undertakings such as use o fequipment, maintenance, and budget support for utilities. |
| | | | | **Issues and countermeasures** |
| (2) Capacity building through D2D/N2N technical advice and scheduled care for is provided remotely by Japanese intensivists and nurses. | D2D/N2N remote advices and consultations provided by the Japanese medical professionals specialized in intensive care (certified critical care physicians and nurses) together with a capacity development program for the SIH medical professionals. | Provision of information of critically ill patients' cases, possibly affected by COVID-19. | | |
| (3) Introduction of the remote-ICU telecommunication system is confirmed and maintained. | Provision of the ICU telemedicine system. | Provision of basic utilities (electricity,internet connection, etc.) and spaces to manage the ICU D2D telemedicine system and other new measures. | | |

## Tentative Plan of Operation

**Version 1**

**Date: November 15, 2022**

**Project Title: Project for Capacity Development of ICU Using Telemedicine under COVID-19 Pande**

| **Inputs** | Year | Ⅲ | | | Ⅳ | | | Remarks | Monitoring | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Month | 7 | 8 | 9 | 10 | 11 | 12 | | Issue | Solution |
| **Expert** | | | | | | | | | | |
| Chief Advisor | Plan | | | | | | | Inputs from these experts will be shared with other countries | | |
| | Actual | | | | | | | | | |
| ICU Specialized Doctor | Plan | | | | | | | | | |
| | Actual | | | | | | | | | |
| ICU Specialized Nurse | Plan | | | | | | | | | |
| | Actual | | | | | | | | | |
| Other short-term experts such as ICT engineers | Plan | | | | | | | | | |
| | Actual | | | | | | | | | |

| **Activities** | Year | Ⅲ | | | Ⅳ | | | Responsible Organization | | Achievements | Issue & Countermeasures |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sub-Activities** | Month | 7 | 8 | 9 | 10 | 11 | 12 | **Japan** | **SIH** | | |
| **Output 1: Medical professionals (including doctors and nurses) in SIH understand the basics on intensive care and the fuctions of ICU telemedicine system, and are ready to receive remote D2D/N2N technical advice and support.** | | | | | | | | | | | |
| 1.1 Implement follow-up session. | Plan | | | | | | | JICA | SIH | | |
| | Actual | | | | | | | | | | |
| 1.2 Provision of training materials. | Plan | | | | | | | | | Conducted additional training for nurses in the form of real-time online training in October. | |
| | Actual | | | | | | | | | | |
| **Output 2: Capacity of medical professionals is enhanced throuhg remote D2D/N2N technical advices and consultations conducted by JICA expert team including certified critical care physicians and nurses.** | | | | | | | | | | | |
| 2.1 Implement scheduled care | Plan | | | | | | | JICA | SIH | Scheduled care for doctors started on 29 August and for nurses started on 31 August. | |
| | Actual | | | | | | | | | | |
| 2.2 Monitor remote ICU service | Plan | | | | | | | | | | |
| | Actual | | | | | | | | | | |
| **Output 3: The environment of SIH including the remote-ICU telecommunication system is maintained in order to make good use of remote D2D/N2N trainings and technical advice.** | | | | | | | | | | | |
| 3.1 Operation Check and Technical Support of Remote ICU Telecommunication System | Plan | | | | | | | JICA | SIH | Conducted operation check in August. 1 doctor and 11 nurses participated in the remote ICU telecommunication system user training in August. | |
| | Actual | | | | | | | | | | |
| **Duration / Phasing** | Plan | | | | | | | | | | |
| | Actual | | | | | | | | | | |

| **Monitoring Plan** | Year | Ⅲ | | | Ⅳ | | | Remarks | Issue | Solution |
|---|---|---|---|---|---|---|---|---|---|---|
| | Month | 7 | 8 | 9 | 10 | 11 | 12 | | | |
| **Monitoring** | | | | | | | | | | |
| **Joint Coordinating Committee** | Plan | | | | | | | JCC will be held additionally if need. | | |
| | Actual | | | | | | | | | |
| **Submission of Monitoring Sheet** | Plan | | | | | | | | | |
| | Actual | | | | | | | | | |
| **Reports/Documents** | | | | | | | | | | |
| **Project Completion Report** | Plan | | | | | | | Tentative | | |
| | Actual | | | | | | | | | |
| **Public Relations** | | | | | | | | | | |
| **Operation of Project web page** | Plan | | | | | | | Together with other countries | | |
| | Actual | | | | | | | | | |

# Appendix 4: Monitoring Sheet ver.0 & ver. 1

## TO CR of JICA BANGLADESH OFFICE

**PROJECT MONITORING SHEET**

**Project Title: Project for Capacity Development of ICU Using Telemedicine under COVID-19 Pandemic**

**Version of the Sheet: Ver.0**

**Name: Mr. NAKAGAWA Hiroaki**

**Title: Team Leader/ Remote-ICU services planning**

**Submission Date: July 29, 2022**

# I. Summary

# 1 Progress

## 1-1 Progress of Inputs

### 1-1-1 JICA Side

### (1) Japanese Experts

| No. | Assigned Field of Work | Name of Expert | Remarks |
|---|---|---|---|
| 1. | Team leader/ Remote-ICU services planning | Mr. Hiroaki Nakagawa | |
| 2. | Remote intensive care 1/ Remote ICU planning 1/ Doctor 1 | Dr. Yoshihiko Konoike | |
| 3. | Remote intensive care 2/ Remote ICU planning 2/ Nurse 1 | Mr. Shingo Moriguchi | |
| 4. | Remote intensive care 3/ Remote ICU planning 3/Nurse 2 | Mr. Kenji Ichimura | |
| 5. | Teaching materials/ Public relations 1 | Ms. Ayako Nakazato | |
| 6. | Remote-ICU telecommunication system | Mr. Yuji Takada | |
| 7. | Remote ICU Management | Ms. Kaniz Fatema | |
| 8. | Regional Director for Asia Pacific / Monitoring | Mr. Shuji Tokumaru | |
| 9. | Remote Service Management / Public Relations2 | Ms. Fuki Fujiwara | |

## (2) Machinery and Equipment Lending

The list of machinery and equipment which has been lent since the preliminary survey is shown as below.

| Name of Property | Standard, Part Number | Quantity | Purchase Price | |
|---|---|---|---|---|
| | | | Purchase Price | Currency |
| Desktop | Fujitsu / ESPRIMO WD2/E2 | 2 | 299,251 | JPN |
| LAN card | 10Gtek / 82576-2T-X1 | 2 | 9,091 | JPN |
| Keyboard | Logitech / MK120 | 2 | 8,307 | JPN |
| 3K Monitor | LG / 32QN600-B | 1 | 33,000 | JPN |
| Full HD Monitor | LG / 32ML600M | 1 | 24,891 | JPN |
| NAS server 6bay | Synology / DS1621+ | 2 | 201,122 | JPN |
| HDD 4TB | Seagate / ST4000VN008 | 12 | 147,436 | JPN |
| Microphone speaker | YAMAHA / YVC-330 | 7 | 357,000 | JPN |
| Audio cable | Order Made | 5 | 76,500 | JPN |
| Adapter for Microphone speaker | MUSB-5V1A | 5 | 2,995 | JPN |
| IP Camera | Amcrest / IP4M-1051 | 6 | 127,525 | JPN |
| PoE Splitter | ANVISON | 6 | 6,818 | JPN |
| IP Camera | Axis / M5525-E | 5 | 609,141 | JPN |
| Web Camera | Logicool / C922n | 1 | 7,984 | JPN |
| Main router | Netgear / RBK852(RBR850) | 2 | 129,471 | JPN |
| Transformer (for UPS) | Swallow electronic / SU-2000GX-505 | 2 | 100,000 | JPN |
| 24 port PoE hub | Netgear / GS724TP | 1 | 46,319 | JPN |
| 8 port PoE hub | Netgear / GS108PP | 6 | 84,851 | JPN |
| Document scanner | ELMO / MX-P2 | 1 | 39,000 | JPN |
| HDMI capture board | Uraytech / UHE265-1L | 2 | 69,324 | JPN |
| Mobile Camera Stand | As One / 7-1225-01 | 5 | 67,123 | JPN |
| Clip | Smallrig / 2164 | 5 | 5,905 | JPN |
| Camera Stand(bracket) | Order Made | 5 | 296,000 | JPN |
| USB cable for UPS-NAS | APC / AP98117J | 2 | 2,315 | JPN |
| UPS | APC / SMC2000I | 2 | 6,948.61 | AED |

## (3) Local Operational Cost Shared by the Japanese Side

Not applicable as of the submission of the monitoring sheet (Ver.0).

## 1-1-2 Ship International Hospital Side

## (1) Assignment of Counterparts (C/Ps)

### (a) Project Manager

| No. | Affiliation and Position | Project Assignment Period | Remarks |
|---|---|---|---|
| 1. | Director Administration | July – December 2022 | |

### (b) Project Coordinator

| No. | Affiliation and Position | Project Assignment Period | Remarks |
|---|---|---|---|
| 1. | Director of Hospital Operations & Quality | July – December 2022 | |
| 2. | Clinical Engineer | July – December 2022 | |

### (c) Medical Professionals

| No. | Affiliation and Position | Project Assignment Period | Remarks |
|---|---|---|---|
| 1. | COVID-19 Unit in charge Doctor<br>Coordinator for COVID-19<br>Physician | July – December 2022 | |
| 2. | COVID-19 ICU in charge Doctor<br>Coordinator for COVID-19 ICU<br>Physician | July – December 2022 | |
| 3. | ICU in charge Doctor<br>Coordinator for General ICU<br>Physician | July – December 2022 | |
| 4. | Nursing Manager<br>Coordinator for ICU Nurses | July – December 2022 | |
| 5. | IT Engineer<br>ICT Equipment for Telemedicine | July – December 2022 | |

## (2) Local Operational Cost Shared by Ship International Hospital Side

Not applicable as of the submission of the monitoring sheet (Ver.0).

## 1-2 Progress of Activities

The Project team started full scale project activities in July 2022 with a kick-off meeting on July 25 2022. As a pilot activity, the trainings such as the on-demand online training, real-time online training, remote conference, and scheduled care had been provided during the preliminary survey. In this project, the scheduled care and follow-up sessions are to be provided as activities related to Output 1 and 2. Although the online training has already been conducted during the preliminary survey, the training for nurses will also be conducted in this project at the request of the SIH. Regarding the Remote ICU Telecommunication System, it had been installed into Ship International Hospital (hereinafter referred to as "SIH") during the preliminary survey as well. Therefore, in this project the operation check and technical support of the system are to be provided in terms of Output 3.

## 1-3 Achievement of Output

### 1-3-1 Output 1

With regard to the on-demand online training, two physicians of SIH took a course of *Emergency Neurological Life Support* during the period of the preliminary survey.

Regarding the real-time online training, the original plan was to conduct the real-time online training; however, the rapid increase in the number of COVID-19 patients in Bangladesh made it difficult to conduct the real-time online training due to the tight work schedule of the medical professionals who were to receive the training. Therefore, data was created on the Internet for the target medical professionals, and from May 1 to July 1, 2021, a self-learning type online training program was conducted for 29 physicians and 33 nurses, who participated in the training at their own pace. For those who were not comfortable with self-study alone, JICA experts also arranged for them to participate in the real-time online training conducted in Indonesia. 4 physicians and 7 nurses participated in the training.

The following tables show the results of the self-learning type online training for physicians and nurses.

Table 1. Result of self-learning type online training (Physicians)

| Name of the course | Number of trainees | Test results Out of full score 5 points (Rate of correct answers) | |
|---|---|---|---|
| | | Pre-test | Post-test |
| M1-1 | 29 | 3.6 (73%) | 4.1 (82%) |
| M1-2 | 29 | 2.3 (46%) | 3 (60%) |
| M1-3 | 29 | 2.2 (43%) | 1.9(38%) |
| M1-4 | 29 | 2.3 (46%) | 2.6 (52%) |

| | | | |
|---|---|---|---|
| M1-5 | 29 | 1.9 (38%) | 2.1 (42%) |
| M2-1 | 29 | 3.4 (67%) | 3.3 (67%) |
| M2-2 | 24 | 3.3(66%) | 3.3 (66%) |

Table 2. Result of self-learning type online training (Nurses)

| **Name of the course** | **Number of trainees** | **Test results Out of full score 5 points（Rate of correct answers）** | |
|---|---|---|---|
| | | **Pre-test** | **Post-test** |
| M1-1 | 33 | 2.2 (44%) | 2.8 (55%) |
| M1-2 | 31 | 2.5 (50%) | 2.9 (59%) |
| M1-3 | 29 | 3 (59%) | 3.6 (72%) |
| M1-4 | 26 | 3.2 (63%) | 3.5 (69%) |
| M1-5 | 24 | 1.7 (34%) | 1.7 (34%) |
| M2-1 | 23 | 2.2 (44%) | 2.4 (48%) |
| M2-2 | 21 | 3 (59%) | 3.1 (62%) |

In June 2021, the remote conferences for physicians and nurses were conducted once for each group. The following tables show the outline of remote conferences for physician and nurses.

Table 3. Result of Remote conference

| | **Physicians** | **Nurses** |
|---|---|---|
| Date | June 22 2021 | June 21 2021 |
| Participants | 8（Male:5, Female: 3） | 5（Male:3, Female: 2） |
| Main Contents | Review of a case of a pregnant woman affected by COVID-19. | Review of a case of treatment and care of a patient with severe COVID-19 infection who was admitted to the ICU for a long duration. |

The ICU telemedicine system user training was remotely conducted for ICT-related department staff on April 12 2021 with the purpose of promoting understanding of the outline of ICT system and how to use the ICT equipment. 6 members of the department participated in this training from SIH.

With reference to the indicator 1 of the Output -1 in PDM: Number of remote trainings and D2D/N2N advice and consultation, as of the end of February 2022 is as follows.

Table 4. Number of sessions conducted by the end of February 2022

| Training/session | Number of sessions conducted | |
|---|---|---|
| | Physicians | Nurses |
| Online training | 7 | 7 |
| Remote conference | 1 | 1 |
| Scheduled care | 1 | 1 |
| **Training/session** | **Number of sessions conducted** | |
| Remote ICU system user training | 1 | |

## 1-3-2 Output 2

During the preliminary survey, scheduled care was conducted once for physicians on January 27 2021 and once for nurses on January 26 2021 as a pilot activity, utilizing alternative ICT equipment (basic ICT equipment) as it took time to clear the ICT equipment through customs. This project starts with carrying scheduled care out with fully-installed the remote ICU telecommunication system.

With reference to the indicator 1 of the Output -2 in PDM: Number of the ICU medical professionals in SIH (such as doctors, nurses, and ICT engineers) who have received remote training and D2D/N2N advice and consultation, as of the end of February 2022, the date is shown in the table below.

Table 5. Number of medical professionals

| Training/session | Number as of the end of February 2022 | |
|---|---|---|
| | Physicians | Nurses |
| On-demand online training | 2 | 0 |
| Real-time online training (7 sessions) | 29 | 33 |
| Remote conference (1 session) | 8 | 5 |
| Scheduled care (1 session) | 3 | 3 |
| **Training/session** | **Number as of the end of February 2022** | |
| Remote ICU system user training | 6 | |

As for the indicator 2 of the Output 2 in PDM: Number of clinical cases in which remote technical advice were provided, there are 2 cases by the end of February 2022.

### 1-3-3 Output 3

The ICT equipment, which is necessary for Japanese intensive care specialists to share information of ICU impatient with physicians and nurses at SIH and provide clinical support through a network, have been lent to SIH since the preliminary survey. This project confirms that the remote ICU telecommunication system functions properly and gives technical support to SIH in order to implement remote ICU service smoothly. Besides, the ICT equipment is currently in a status of lend; however, a necessary measure will be taken after coordinating with the related agency such as the Ministry of Health and Family Welfare to handover it to SIH until the end of the project.

## 1-4 Achievement of the Project Purpose

Regarding the activities of Output 1, the trainings and remote conference had already been provided during the preliminary survey as pilot activities. With additional trainings, other activities of Output 1, 2, and 3 will be carried out with continued cooperation from SIH so that the Project purpose can be achieved as expected.

In regard to the indicator 1 of the Project Purpose in PDM: Number of the ICU medical specialists (such as doctor, nurse, ICT engineer) who have received remote training and D2D/N2N advice and consultation, the data is shown in the table below.

Table 6. Number of medical professionals

| Training/session | Number as of the end of February 2022 | |
|---|---|---|
| | Physicians | Nurses |
| On-demand type on-line training | 2 | 0 |
| Real-time type on-line training (7 sessions) | 29 | 33 |
| Remote conference (1 session) | 8 | 5 |
| Scheduled care (1 session) | 3 | 3 |
| **Training/session** | **Number as of the end of February 2022** | |
| Remote ICU system user training | 6 | |

In relation to the indicator 2 of the Project Purpose in PDM: Number of patients treated by the ICU medical professionals in SIH who have received remote training and D2D/N2N advice and

consultation, as of the end of July 2022, is 148 patients in total: 44 COVID-19 ICU patients and 104 Non COVID-19 ICU patients.

## 1-5 Changes of Risks and Actions for Mitigation

Not applicable as of the submission of the monitoring sheet (Ver.0).

## 1-6 Progress of Actions undertaken by JICA

Not applicable as of the submission of the monitoring sheet (Ver.0).

## 1-7 Progress of Actions undertaken by Sip International Hospital

Not applicable as of the submission of the monitoring sheet (Ver.0).

## 1-8 Progress of Environmental and Social Considerations (if applicable)

Not applicable as of the submission of the monitoring sheet (Ver.0).

## 1-9 Progress of Considerations on Gender/Peace Building/Poverty Reduction, disability, disease infection, social system, human wellbeing, human right, and gender equality (if applicable)

The number of the participants in remote conference and scheduled care calculated by sex is shown as follows:

Table 7. Number of medical professionals

| Physicians | | Nurses | |
|---|---|---|---|
| Male | Female | Male | Female |
| 7 | 4 | 5 | 3 |
| Total = 11 | | Total = 8 | |

*Gender data of participants in the real-time type on-line training was not recorded in the preliminary survey.

## 1-10 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)

There are no other remarkable issues as of the submission of the monitoring sheet (ver.0).

## 2 Delay of Work Schedule and/or Problems (if any)

### 2-1 Detail

There are no notable challenges as of the submission of the monitoring sheet (ver. 0).

### 2-2 Cause

Not applicable as of the submission of the monitoring sheet (Ver.0).

### 2-3 Action to be taken

Not applicable as of the submission of the monitoring sheet (Ver.0).

### 2-4 Roles of Responsible Persons/Organization (JICA, SIH, etc.)

Not applicable as of the submission of the monitoring sheet (Ver.0).

## 3 Modification of the Project Implementation Plan

### 3-1 PO

No modification as of the submission of the monitoring sheet (Ver. 0).

### 3-2 Other modifications on detailed implementation plan

No modification as of the submission of the monitoring sheet (Ver. 0).

## 4 Preparation of Ship International Hospital toward after completion of the Project

The remote ICU telecommunication system had already been installed in SIH during the preliminary survey. Although the current status of the ICT equipment is lending from JICA Bangladesh Office, SIH and Japanese side will reach an agreement on how to treat the installed ICU telecommunication system before the completion of the Project. There are three options mentioned in R/D: JICA may (1) sell the ICT equipment to SIH at book value if it has willingness to continue the use of ICU telemedicine service; or (2) remove them from the project site if SIH no longer needs the ICU telemedicine service; or (3) hand over the ICT equipment to SIH as a voluntary transfer only if JICA and SIH agree on such arrangement with the Ministry of Health and Family Welfare. Japanese side will take a necessary measure to treat ICU telecommunication system in line with SIH's wishes.

## II. Project Monitoring Sheet I & II *as Attached*

## TO CR of JICA BANGLADESH OFFICE

**PROJECT MONITORING SHEET**

**Project Title: Project for Capacity Development of ICU Using Telemedicine under COVID-19 Pandemic**

**Version of the Sheet: Ver.1**

**Name: Mr. NAKAGAWA Hiroaki**

**Title: Team Leader/ Remote-ICU services planning**

**Submission Date: November 15, 2022**

# I. Summary

# 1 Progress

## 1-1 Progress of Inputs

### 1-1-1 JICA Side

### (1) Japanese Experts

Total number of assignment (M/M) of Japanese Experts by the end of October is 4.72 M/M.

| No. | Assigned Field of Work | Name of Expert | Remarks |
|---|---|---|---|
| 1. | Team leader/ Remote-ICU services planning | Mr. Hiroaki Nakagawa | |
| 2. | Remote intensive care 1/ Remote ICU planning 1/ Doctor 1 | Dr. Yoshihiko Konoike | |
| 3. | Remote intensive care 2/ Remote ICU planning 2/ Nurse 1 | Mr. Shingo Moriguchi | |
| 4. | Remote intensive care 3/ Remote ICU planning 3/Nurse 2 | Mr. Kenji Ichimura | |
| 5. | Teaching materials/ Public relations 1 | Ms. Ayako Nakazato | |
| 6. | Remote-ICU telecommunication system | Mr. Yuji Takada | |
| 7. | Remote ICU Management | Ms. Kaniz Fatema | |
| 8. | Regional Director for Asia Pacific / Monitoring | Mr. Shuji Tokumaru | |
| 9. | Remote Service Management / Public Relations2 | Ms. Fuki Fujiwara | |

## (2) Machinery and Equipment Lending

The list of machinery and equipment which has been lent since the preliminary survey is shown as below.

| Name of Property | Standard, Part Number | Quantity | Purchase Price | |
|---|---|---|---|---|
| | | | Purchase Price | Currency |
| Desktop | Fujitsu / ESPRIMO WD2/E2 | 2 | 299,251 | JPN |
| LAN card | 10Gtek / 82576-2T-X1 | 2 | 9,091 | JPN |
| Keyboard | Logitech / MK120 | 2 | 8,307 | JPN |
| 3K Monitor | LG / 32QN600-B | 1 | 33,000 | JPN |
| Full HD Monitor | LG / 32ML600M | 1 | 24,891 | JPN |
| NAS server 6bay | Synology / DS1621+ | 2 | 201,122 | JPN |
| HDD 4TB | Seagate / ST4000VN008 | 12 | 147,436 | JPN |
| Microphone speaker | YAMAHA / YVC-330 | 7 | 357,000 | JPN |
| Audio cable | Order Made | 5 | 76,500 | JPN |
| Adapter for Microphone speaker | MUSB-5V1A | 5 | 2,995 | JPN |
| IP Camera | Amcrest / IP4M-1051 | 6 | 127,525 | JPN |
| PoE Splitter | ANVISON | 6 | 6,818 | JPN |
| IP Camera | Axis / M5525-E | 5 | 609,141 | JPN |
| Web Camera | Logicool / C922n | 1 | 7,984 | JPN |
| Main router | Netgear / RBK852(RBR850) | 2 | 129,471 | JPN |
| Transformer (for UPS) | Swallow electronic / SU-2000GX-505 | 2 | 100,000 | JPN |
| 24 port PoE hub | Netgear / GS724TP | 1 | 46,319 | JPN |
| 8 port PoE hub | Netgear / GS108PP | 6 | 84,851 | JPN |
| Document scanner | ELMO / MX-P2 | 1 | 39,000 | JPN |
| HDMI capture board | Uraytech / UHE265-1L | 2 | 69,324 | JPN |
| Mobile Camera Stand | As One / 7-1225-01 | 5 | 67,123 | JPN |
| Clip | Smallrig / 2164 | 5 | 5,905 | JPN |
| Camera Stand(bracket) | Order Made | 5 | 296,000 | JPN |
| USB cable for UPS-NAS | APC / AP98117J | 2 | 2,315 | JPN |
| UPS | APC / SMC2000I | 2 | 6,948.61 | AED |

### (3) Local Operational Cost Shared by the Japanese Side

| | 1st Year (FY2021/2022, the disbursed amount) | Remarks |
|---|---|---|
| Operational Cost (USD) | | |
| Operational Cost (BDT) | | |

## 1-1-2 Ship International Hospital Side

### (1) Assignment of Counterparts (C/Ps)

### (a) Project Manager

| No. | Affiliation and Position | Project Assignment Period | Remarks |
|---|---|---|---|
| 1. | Director Administration | July – December 2022 | |

### (b) Project Coordinator

| No. | Affiliation and Position | Project Assignment Period | Remarks |
|---|---|---|---|
| 1. | Director of Hospital Operations & Quality | July – December 2022 | |
| 2. | Clinical Engineer | July – December 2022 | |

### (c) Medical Professionals

| No. | Affiliation and Position | Project Assignment Period | Remarks |
|---|---|---|---|
| 1. | COVID-19 Unit in charge Doctor<br>Coordinator for COVID-19 Physician | July – December 2022 | |
| 2. | COVID-19 ICU in charge Doctor<br>Coordinator for COVID-19 ICU Physician | July – December 2022 | |
| 3. | ICU in charge Doctor<br>Coordinator for General ICU Physician | July – December 2022 | |
| 4. | Nursing Manager<br>Coordinator for ICU Nurses | July – December 2022 | |
| 5. | IT Engineer<br>ICT Equipment for Telemedicine | July – December 2022 | |

### (2) Local Operational Cost Shared by Ship International Hospital Side

| | 1st Year (FY2021/2022, the disbursed amount) | Remarks |
|---|---|---|
| Operational Cost (BDT) | | |

## 1-2 Progress of Activities

The Project team started full scale project activities in July 2022 with a kick-off meeting on July 25, 2022 and 1st JCC on September 21. As a pilot activity, the trainings such as the on-demand online training, real-time online training, remote conference, and scheduled care had been provided during the preliminary survey. This project provides the scheduled care and follow-up sessions as activities related to Output 1 and 2.

Although the on-line training has already been conducted during the preliminary survey, the training for nurses was also conducted in this project at the request of the Ship International Hospital (hereinafter referred to as "SIH"). The Project team conducted 4 training sessions in the form of the real-time online training for 11 nurses from 4 to 31 October, 2022.

The scheduled care, an activity of Output 2, began on 28 August for physicians and 31 August for nurses. The Project team conducts the scheduled care every Monday for physicians and every Wednesday for nurses. For the first 6 - 7 sessions, the Project team dealt with past cases, but since mid-October, the Project team has been able to discuss patient treatment, management, and nursing care with the patients actually admitted in the ICU, sharing images from IP cameras, document scanner, and electronic medical records.

Regarding the remote ICU telecommunication system, it had been installed into SIH during the preliminary survey as well. Therefore, in this project the operation check and technical support of the system are to be provided in terms of Output 3. The system has been utilized during the scheduled care well and Japanese intensivists and intensive care certified nurses have been able to provide accurate advice and recommendations based on the clear information shared by the system. In addition, from 17 to 19 October1, 2022, Dr. KONOIKE, Mr. MORIGUCHI, Ms. FATEMA and Mr. TOKUMARU visited SIH to learn more about the current situation of the ICU and exchange opinions regarding the project activities done so far to utilize for the project future activities, especially the scheduled care.

## 1-3 Achievement of Output

### 1-3-1 Output 1

With regard to the on-demand online training, two physicians of SIH took a course of *Emergency Neurological Life Support* during the period of the preliminary survey.

Regarding the real-time online training, the original plan was to conduct the real-time online training; however, the rapid increase in the number of COVID-19 patients in Bangladesh made it difficult to conduct the real-time online training due to the tight work schedule of the medical professionals who were to receive the training. Therefore, data was created on the Internet for the target medical professionals, and from May 1 to July 1, 2021, a self-learning type online training program was conducted for 29 physicians and 33 nurses, who participated in the training at their own pace. For those who were not comfortable with self-study alone, JICA experts also arranged

for them to participate in the real-time online training conducted in Indonesia. 4 physicians and 7 nurses participated in the training.

The following tables show the results of the self-learning type online training for physicians and nurses.

Table 1. Result of self-learning type online training (Physicians)

| Name of the course | Number of trainees | Test results Out of full score 5 points (Rate of correct answers) | |
|---|---|---|---|
| | | Pre-test | Post-test |
| M1-1 | 29 | 3.6 (73%) | 4.1 (82%) |
| M1-2 | 29 | 2.3 (46%) | 3 (60%) |
| M1-3 | 29 | 2.2 (43%) | 1.9(38%) |
| M1-4 | 29 | 2.3 (46%) | 2.6 (52%) |
| M1-5 | 29 | 1.9 (38%) | 2.1 (42%) |
| M2-1 | 29 | 3.4 (67%) | 3.3 (67%) |
| M2-2 | 24 | 3.3(66%) | 3.3 (66%) |

Table 2. Result of self-learning type online training (Nurses)

| Name of the course | Number of trainees | Test results Out of full score 5 points（Rate of correct answers） | |
|---|---|---|---|
| | | Pre-test | Post-test |
| M1-1 | 33 | 2.2 (44%) | 2.8 (55%) |
| M1-2 | 31 | 2.5 (50%) | 2.9 (59%) |
| M1-3 | 29 | 3.0 (59%) | 3.6 (72%) |
| M1-4 | 26 | 3.2 (63%) | 3.5 (69%) |
| M1-5 | 24 | 1.7 (34%) | 1.7 (34%) |
| M2-1 | 23 | 2.2 (44%) | 2.4 (48%) |
| M2-2 | 21 | 3 (59%) | 3.1 (62%) |

In June 2021, the remote conferences for physicians and nurses were conducted once for each group. The following tables show the outline of remote conferences for physician and nurses.

Table 3. Result of remote conference

| | **Physicians** | **Nurses** |
|---|---|---|
| Date | June 22 2021 | June 21 2021 |
| Participants | 8（Male:5, Female: 3） | 5（Male:3, Female: 2） |
| Main Contents | Review of a case of a pregnant woman affected by COVID-19. | Review of a case of treatment and care of a patient with severe COVID-19 infection who was admitted to the ICU for a long duration. |

The ICU telemedicine system user training was remotely conducted for ICT-related department staff on April 12 2021 with the purpose of promoting understanding of the outline of ICT system and how to use the ICT equipment. 6 members of the department participated in this training from SIH.

At the request from SIH, this project conducted four training sessions for nurses in form of the real-time online training. 11 nurses participated in the training from 4 to 31 October, 2022. The following tables show the results of the real-time online training for nurses.

Table 4. Result of real-time online training (Nurses)

| **Name of the course** | **Number of trainees** | **Test results Out of full score 5 points （Rate of correct answers）** | |
|---|---|---|---|
| | | **Pre-test** | **Post-test** |
| M1-1 | 11 | 3.0 (60%) | 2.9 (58%) |
| M1-2 | 9 | 1.0 (20%) | 1.0 (20%) |
| M1-3 | 5 | 1.4 (28%) | 1.4 (28%) |
| M2-1 | 7 | 2.3 (46%) | 2.4 (49%) |

There was no improvement in test results between pre- and post-test. The main cause for this result could be a poor language (English) skill of the participants. Basically their language skill, except the nurse coordinator, is not that high. In addition, the AI narration of the training video was fast and non-stop that they had to move on to the next narration before they could understand the contents they just heard, which made it more difficult for them to understand.

With reference to the indicator 1 of the Output -1 in PDM: Number of remote trainings and D2D/N2N advice and consultation, as of the end of October 2022 is as follows.

Table 4. Number of sessions conducted by the end of October 2022

| Training/session | Number of sessions conducted | |
|---|---|---|
| | Physicians | Nurses |
| Online training | 7 | 7 |
| Remote conference | 1 | 1 |
| Scheduled care | 8 | 9 |
| Additional online training | - | 4 |
| **Training/session** | **Number of sessions conducted** | |
| Remote ICU system user training (for ICT engineers) | 1 | |
| Remote ICU telecommunication system user training (for physicians and nurses) | 3 | |

## 1-3-2 Output 2

During the preliminary survey, the scheduled care was conducted once for physicians on January 27, 2021 and once for nurses on January 26, 2021 as a pilot activity, utilizing alternative ICT equipment (basic ICT equipment) as it took time to clear the ICT equipment through customs. This project started with carrying scheduled care out with fully-installed the remote ICU telecommunication system on 28 August for physicians and 31 August for nurses. The Project team conducted 15 times (7 for physicians, 8 for nurses) by the end of October 2022. The schedule was not delayed and proceeded as originally planned.

In addition, remote advising through scheduled care has been very effective. It has benefited greatly from the remote ICU telecommunication system. The Japanese physician and nurse are able to give more accurate advice since they can clearly see the patient's condition on the screen through the system.

With reference to the indicator 1 of the Output -2 in PDM: Number of the ICU medical professionals in SIH (such as doctors, nurses, and ICT engineers) who have received remote training and D2D/N2N advice and consultation, as of the end of October 2022, the date is shown in the table below.

Table 5. Number of medical professionals

| Training/session | Number as of the end of October 2022 | |
|---|---|---|
| | Physicians | Nurses |
| On-demand online training | 2 | 0 |
| Real-time online training (7 sessions) | 29 | 33 |
| Remote conference (1 session) | 8 | 5 |
| Scheduled care (8 sessions for physicians, 9 for nurses) *accumulated | 25 | 33 |
| Additional real-time online training (4 sessions) | - | 11 |

| Training/session | Number as of the end of October 2022 |
|---|---|
| Remote ICU system user training (for ICT engineers) | 6 |
| Remote ICU telecommunication system user training (for physicians and nurses) | 12 |

As for the indicator 2 of the Output 2 in PDM: Number of clinical cases in which remote technical advice were provided, there are 19 cases by the end of October 2022.

## 1-3-3 Output 3

The ICT equipment, which is necessary for Japanese intensive care specialists to share information of ICU impatient with physicians and nurses at SIH and provide clinical support through a network, have been lent to SIH since the preliminary survey. At the beginning of the project, the Project team confirmed that the remote ICU telecommunication system functioned properly, and JICA Experts have been giving technical support to SIH in order to implement remote ICU service smoothly. Besides, the ICT equipment is currently in a status of lend; however, a necessary measure will be taken in consultation with the parties.

In addition, in August 2022, the Project team implemented the remote ICU telecommunication system user training for one physician and 11 nurses. The training was held three times (8, 10 and 16 August) in small groups so that each participant could operate the ICT equipment. During the training, the Japanese ICT expert explained how to operate the microphone speaker, document scanner, and IP camera, which would often be utilized in the scheduled care, and informed the participants how to share the screen of the electronic medical record of SIH and the precautions to be taken when using each ICT equipment.

## 1-4 Achievement of the Project Purpose

Regarding the activities of Output 1, the trainings and remote conference had already been provided during the preliminary survey as pilot activities. In addition to the trainings which had already conducted during the preliminary survey, this project conducted four training sessions for nurses in form of the real-time online training as requested by SIH as none of the nurses currently working at SIH did not participate in the training during the preliminary survey. Also, with other activities of Output 1, 2, and 3 will be carried out with continued cooperation from SIH so that the project purpose can be achieved as expected.

In regard to the indicator 1 of the Project Purpose in PDM: Number of the ICU medical specialists (such as doctor, nurse, ICT engineer) who have received remote training and D2D/N2N advice and consultation, the data is shown in the table below.

Table 6. Number of medical professionals

| **Training/session** | **Number as of the end of October 2022** | |
|---|---|---|
| | **Physicians** | **Nurses** |
| On-demand online training | 2 | 0 |
| Real-time online training (7 sessions) | 29 | 33 |
| Remote conference (1 session) | 8 | 5 |
| Scheduled care (8 sessions for physicians, 9 for nurses) *accumulated | 25 | 33 |
| Additional real-time online training (4 sessions) | - | 11 |
| **Training/session** | **Number as of the end of October 2022** | |
| Remote ICU system user training (for ICT engineers) | 6 | |
| Remote ICU telecommunication system user training (for physicians and nurses) | 12 | |

In relation to the indicator 2 of the Project Purpose in PDM: Number of patients treated by the ICU medical professionals in SIH who have received remote training and D2D/N2N advice and consultation, as of the end of October 2022, is 177 patients in total: 44 COVID-19 ICU patients and 133 Non COVID-19 ICU patients.

## 1-5 Changes of Risks and Actions for Mitigation

Not applicable as of the submission of the monitoring sheet (Ver.1).

## 1-6 Progress of Actions undertaken by JICA

Not applicable as of the submission of the monitoring sheet (Ver.1).

## 1-7 Progress of Actions undertaken by Sip International Hospital

Not applicable as of the submission of the monitoring sheet (Ver.1).

## 1-8 Progress of Environmental and Social Considerations (if applicable)

Not applicable as of the submission of the monitoring sheet (Ver.1).

## 1-9 Progress of Considerations on Gender/Peace Building/Poverty Reduction, disability, disease infection, social system, human wellbeing, human right, and gender equality (if applicable)

The number of the participants in remote conference, additional real-time online training and scheduled care calculated by sex is shown as follows:

Table 7. Number of medical professionals

| Physicians | | Nurses | |
|---|---|---|---|
| Male | Female | Male | Female |
| 20 | 13 | 7 | 42 |
| Total = 33 | | Total = 49 | |

*Gender data of participants in the real-time online training was not recorded in the preliminary survey.

## 1-10 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)

There are no other remarkable issues as of the submission of the monitoring sheet (ver.1).

## 2 Delay of Work Schedule and/or Problems (if any)

### 2-1 Detail

There are no notable challenges as of the submission of the monitoring sheet (ver. 1).

### 2-2 Cause

Not applicable as of the submission of the monitoring sheet (Ver.1).

### 2-3 Action to be taken

Not applicable as of the submission of the monitoring sheet (Ver.1).

### 2-4 Roles of Responsible Persons/Organization (JICA, SIH, etc.)

Not applicable as of the submission of the monitoring sheet (Ver.1).

## 3 Modification of the Project Implementation Plan

### 3-1 PO

Not applicable as of the submission of the monitoring sheet (Ver.1).

### 3-2 Other modifications on detailed implementation plan

Not applicable as of the submission of the monitoring sheet (Ver.1).

## 4 Preparation of Ship International Hospital toward after completion of the Project

The remote ICU telecommunication system had already been installed in SIH during the preliminary survey. Although the current status of the ICT equipment is lending from JICA Bangladesh Office, SIH and Japanese side will reach an agreement on how to treat the installed ICU telecommunication system before the completion of the Project. There are three options mentioned in R/D: JICA may (1) sell the ICT equipment to SIH at book value if it has willingness to continue the use of ICU telemedicine service; or (2) remove them from the project site if SIH no longer needs the ICU telemedicine service; or (3) hand over the ICT equipment to SIH as a voluntary transfer only if JICA and SIH agree on such arrangement with the Ministry of Health and Family Welfare. Japanese side will take a necessary measure to treat ICU telecommunication system in line with SIH's wishes.

## II. Project Monitoring Sheet I & II *as Attached*

# Appendix 5: Work Plan

People's Republic of Bangladesh
Ship International Hospital

# Project for Capacity Development of ICU Using Telemedicine under COVID-19 Pandemic

# Work Plan

July, 2022

Japan International Cooperation Agency (JICA)

C. D. C. International Corporation

T-ICU Co., Ltd

# Table of Contents

## Chapter 1. Outline of the Project

### 1-1 Background of the Project

As the Coronavirus Diseases 2019 (hereinafter referred to as “COVID-19”) infections spread and prolong worldwide, the infectious status in developing countries is changing incessantly, and support for people’s health and safety needs to be a top priority. Amid the unprecedented spread of infectious diseases, developing countries are facing a shortage of medical personnel such as doctors, nurses, and medical engineers who are responsible for treating patients who are seriously ill or at risk of becoming so, as well as a shortage of intensive care facilities that can isolate infected patients and provide intensive care (hereinafter referred to as "ICU facilities").As part of the “JICA’s Initiative for Global Health and Medicine”, JICA conducted the “Data Collection Survey on the Use of ICU Telemedicine in Pandemic Situations” (hereinafter referred to as “preliminary survey”) from December 2020 to February 2022 in order to survey the needs for supporting ICU against COVID-19 pandemics, and examined technical cooperation based on telemedicine. Furthermore, in the preliminary survey the following was proposed for developing countries that need to strengthen their healthcare systems: to provide training, advice, and guidance by Japanese intensivists and certified specialist nurses to doctors and nurses of the target hospital through the establishment of remote networks. Against such a background, this project targets at Japan East West Medical College Hospital (hereinafter referred to as “JEWMCH”, which is current Ship International Hospital (hereinafter referred to as “SIH”)), which is a private general hospital that received funding from JICA in 2018, in Bangladesh, where needs were identified in the preliminary survey, to provide remote training, advice, and guidance by Japanese intensivists and nurses utilizing the remote-ICU telecommunication system lent during the preliminary survey, based on the level of doctors and nurses and its position in the medical industry in Bangladesh identified through the preliminary survey.

In regard to the proposals, Record of Discussion was signed on January 18, 2022 to launch the project responding to the demands of technical cooperation.

### 1-2 Target Hospital

The Bangladesh government has a policy to improve healthcare services by utilizing the private sector to ensure fair and quality healthcare for all its citizens. JICA decided to finance in a private general hospital project in Bangladesh to support the Bangladeshi government's policy and to contribute to the Japanese government's future investment strategy, which aims to establish 20 Japanese healthcare facilities overseas by 2020.

This project supports the expansion and operation of JEWMCH (opened in 2007, 280 beds and currently known as SIH), which was established by East West Medical College Hospital in Dhaka and Ship Aichi Medical Service Limited established by a Japanese company, Green Hospital Supply Company. With the philosophy of providing international standard medical services to the people of Bangladesh at a conscientious price while utilizing Japanese hospital management know-how, the project aims to

improve medical standards and contribute to regional healthcare by expanding SIH to 650 beds in the future and establishing new highly specialized medical departments.

Table 1-1. Overview of Ship International Hospital

<table>
<tr><th>ICU Staff and Work</th><th colspan="2">Rules for ICU staffing</th></tr>
<tr><td rowspan="2">Doctors<br>ICU: 8 doctors (1 consultants + 5 Med-level doctors + 2 Medical Officers)<br>In addition, 3 anesthesiologists also serve in the ICU and operating room.</td><td>Patients on ventilator support<br>(Severe cases)</td><td>Patients without ventilator support<br>(General cases)</td></tr>
<tr><td rowspan="2">1 nurse handles 1 patient</td><td rowspan="2">1 nurse handles 2 patients</td></tr>
<tr><td>Nurses<br>10 nurses (2 Senior nurses, 8 Junior nurses)<br>1 coordinator<br>Patient Care Assistance (PCA): 6</td></tr>
<tr><td colspan="3">Night shift nurse: More staff will be added when the number of patients increases.<br>ICU night shift<br>Doctors: 1 or 2 doctor(s) at night depend on the shift roster<br>Shift roster (12 hours, 8:00 pm–8:00 am)<br>On-call: 1 consultant.<br>ICU nurse night shift (12 hours)<br>2 Nurses 8:00 pm–8:00 am<br>1 PCA 8:00 pm–8:00 am</td></tr>
<tr><td colspan="3">Acceptance status of ICU, emergency (2021)<br>Number of ambulances received/yearly 151 cases<br>Number of emergency patients/yearly 2542<br>Average admission period COVID-19:10.2 days,<br>non-COVID-19:6.1 days<br>Number of operations/yearly 525 cases<br>Number of ICU patients/yearly COVID-19:67 cases<br>non-COVID-19:14<br>Average length of stay in ICU COVID-19:7.2 days<br>non-VOVID-19:1.3 days</td></tr>
<tr><td colspan="3">Number of COVID-19 ICU patients: 0 (as of July 1, 2022) Number of COVID-19 patients: 16<br>COVID-19 ICU ventilator users: 0 (high-flow nasal cannula (HFNC): 0; continuous positive airway pressure (CPAP): 0)<br>COVID-19 ICU mortality rate: N.A. (as of July 1, 2022)</td></tr>
</table>

Number of ICU beds for COVID-19 cases：20 beds

ICU admission criteria for COVID-19 cases ：

1. Severe/critical COVID-19 patients.
2. Patients who require oxygen therapy (More than 15 L/Min) and continuous monitoring.
3. Patients with worsening organ dysfunction (e.g., increasing respiratory failure).
4. Patients who require multiple organ support.

**1-3 Purpose of the Project (PDM context)**

This project aims to strengthen the ability of SIH to provide intensive care medical services to administrate and treat critically ill patients with COVID-19, and thereby to establish a medical system to administrate and treat critically ill patients in SIH by providing the remote-ICU services including Doctor to Doctor (hereinafter referred to as "D2D") and Nurse to Nurse (hereinafter referred to as "N2N").

The Overall Goal, Project Purpose, Outputs, and Activities are listed in the table below.

Table 1-2. Overall Goal, Project Purpose, Outputs, and Activities

| | |
|---|---|
| Overall Goal | Medical care service system is established in SIH in order to administrate and treat critically ill patients affected by COVID-19 and other infectious diseases. |
| Project Purpose | Medical capacity of intensive care service in SIH is strengthened in order to administrate and treat critically ill patients affected by COVID-19 and other diseases. |
| Output 1 | Medical professionals (including doctors and nurses) in SIH understand the basics on intensive care and the functions of ICU telemedicine system, and are ready to receive remote D2D/N2N technical advice and support. |
| Output 2 | Capacity of medical professionals is enhanced through remote D2D/N2N technical advices and consultations conducted by the JICA expert team including certified critical care physicians and nurses. |
| Output 3 | The environment of SIH including the remote-ICU telecommunication system is maintained in order to make good use of remote D2D/N2N trainings and technical advice. |
| Activity 1 | In SIH, follow-up sessions on medical matters regarding intensive cares (including diagnosis and treatment of infectious diseases) and basic operational techniques of the ICU telemedicine system are conducted on remote basis by a team of Japanese doctors and nurse specialized in intensive care in order to support the trainings conducted during the preliminary survey. |
| Activity 2 | Capacity building through D2D/N2N technical advice and scheduled care is provided remotely by Japanese intensivists and nurses. |
| Activity 3 | Introduction of the remote-ICU telecommunication system is confirmed and maintained. |

**1-4 Project structure (Ship International Hospital and Japanese Team)**

Project structure is as per the following chart.

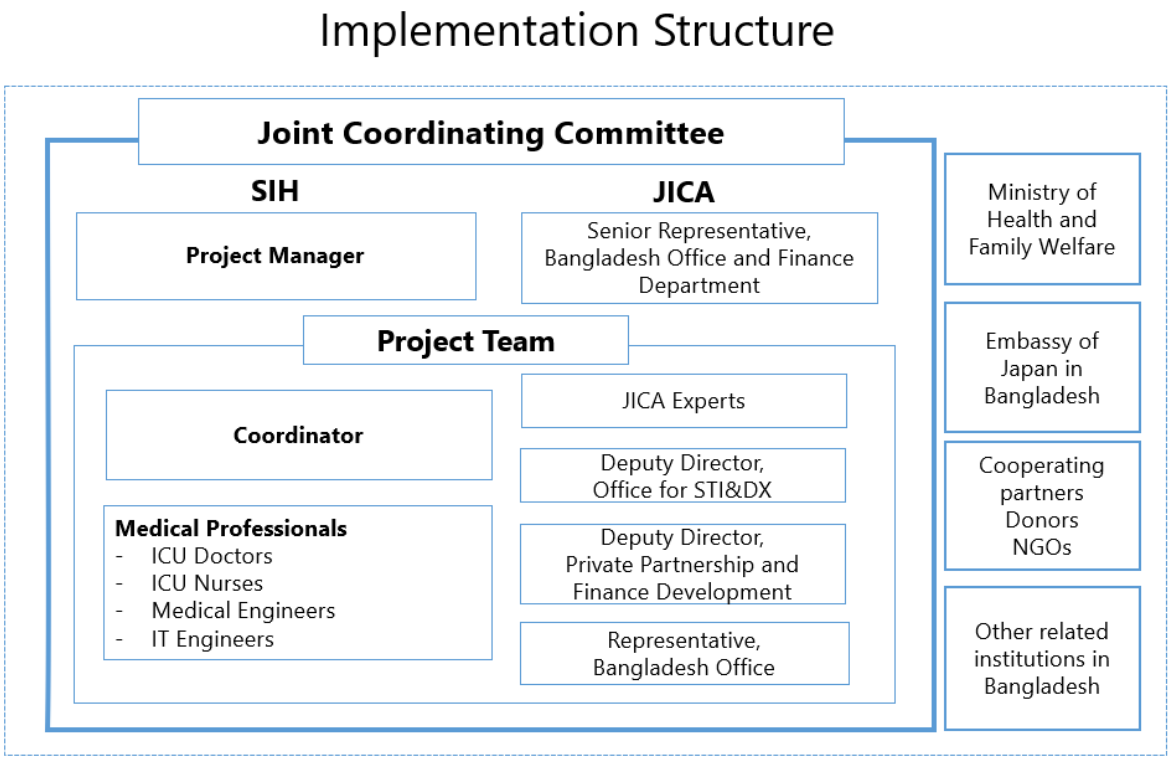



Figure 1-1 Implementation Structure

Focal point and members of the Project are listed in the following tables.

Table 1-3. Ship International Hospital

| Assigned Role | Job Title/Position |
|---|---|
| Project Manager | Director Administration |
| Project Coordinator | Deputy Director of Medical Administration |
| Project Coordinator | Clinical Engineer |
| Coordinator for COVID-19 Doctors | COVID-19 Unit in charge Doctor |
| Coordinator for COVID-19 ICU Doctors | COVID-19 ICU in charge Doctor |
| Coordinator for General ICU Doctors | ICU in charge Doctor |
| Coordinator for ICU Nurses | Nursing Manager |
| ICT Equipment for Telemedicine | IT Engineer |

Table 1-4. JICA Experts

| Person in charge | Name | Company |
|---|---|---|
| Team Leader/ Remote-ICU Services Planning | Mr. Hiroaki Nakagawa | CDC |
| Remote Intensive care / Remote-ICU Planning / Doctor | Dr. Yoshihiko Konoike | T-ICU |
| Remote Intensive care / Remote-ICU Planning /Nurse 1 | Mr. Shingo Moriguchi | T-ICU |
| Remote Intensive care / Remote-ICU Planning /Nurse 2 | Mr. Kenji Ichimura | T-ICU |
| Regional Director for Asia-Pacific / Monitoring | Mr. Shuji Tokumaru | CDC |
| Remote-ICU Service Management / Public Relations | Ms. Fuki Fujiwara | CDC |
| Remote-ICU Management | Ms. Kaniz Fatema | T-ICU |
| Remote-ICU Telecommunication System | Mr. Yuji Takada | CDC |
| Teaching Materials/ Public Relations | Ms. Ayako Nakazato | CDC |

### 1-1 Operation Plan

For the details, please see the attachment (Annex 1: Operation Plan)

## Chapter 2. Activities of the Project

### 2-1 Output1

#### 2-1-2 Follow-up session

During the activity period of the Project, skills (knowledge and know-how in intensive care) that need to be strengthened in the SIH are extracted, and follow-up sessions are conducted according to the results found in the preliminary survey, with the following content.

- Remote Conference: In addition to the regular scheduled care for specific cases, themes that contribute to the improvement of SIHs' medical capabilities are determined in consultation with SIH, and conferences for SIH on such themes are held every two months, approximately twice during the Project period (1-2 hours each).
- Regional Seminar: Regional seminars are scheduled to be held under the technical cooperation projects in 10 countries that are being implemented separately. Doctors and nurses of SIH are encouraged to participate in these seminars.

#### 2-1-3 Provision of training modules

A set of training materials that have been improved since the preliminary survey in a separate technical cooperation project in 10 countries is provided to encourage its reuse in SIH. In addition, based on the basic skills of doctors and nurses identified through the activities related to Outcome 2 and requests from SIH, the training required other than the provision of training modules will be planned, considered, and implemented, as necessary, in consultation with JICA and SIH.

### 2-2 Output2

#### 2-2-1 Scheduled care

Scheduled care is held to give technical advice on clinical cases of admitted patients by Japanese intensive care specialists to medical professionals of SIH.

**Activity 2-1. Scheduled care**

| | |
|---|---|
| Frequency for holding Scheduled Care | 1 – 2 times a week (to be decided based on the situation of SIH). Joining at a routine conference of SIH. |
| Contents of discussion | Discuss diagnosis or management of admitted patients.<br>Consultation such as management of critically ill patients, preparation to receive a patient transfer, debriefing for clinical learning |
| Participants: | Japanese intensive care specialists<br>SIH's doctors and nurses |

#### 2-2-2 Indemnity and personal data security

Prior to conducting scheduled care that provides advice and guidance to the doctors and nurses of SIH, it is necessary to confirm that the act does not correspond to a medical practice under the laws and regulations of the People's Republic of Bangladesh. It should be agreed with SIH that none of the services in remote intensive care using ICT constitutes medical care or any other act which requires

license or permission under the law or regulation in the People's Republic of Bangladesh, and that SIH shall bear any and all responsibility for the provision of medical care to patients at the hospital, and JICA and Japanese intensive care specialists shall in no way bear such responsibility. Japanese intensive care specialists will provide advice based on information such as biometric information, physiological function test results, specimen test results, and imaging test data provided by SIH, and shall not be responsible for any consequences caused by inaccuracy, ambiguity or insufficiency of such information. It is necessary to establish a written agreement between JICA and SIH in advance, and the parties signed the agreement on March 16 2022.

### 2-3 Output3

#### 2-3-1 Operation check and technical support on Remote-ICU Telecommunication System

The remote-ICU telecommunication system was introduced to SIH in the preliminary survey as a pilot activity in order to monitor ICU rooms remotely and to support medical personnel to share the patients' information smoothly and effectively with Japanese intensive care specialists so that they can have effective discussions and consultations. The system consists of two systems: i) a *monitoring system* whose main function is to monitor the ICU remotely, and ii) a *communication system* to communicate with Japan through the Internet.

This project confirms that the remote-ICU telecommunication system which was already introduced at the preliminary survey stage operates properly, and gives technical supports including an introductory training on how to use ICT equipment for doctors and nurses who participate in the scheduled care, if necessary.

## Chapter 3. Plan of Operation

### 3-1 Administrative aspect

#### 3-1-1 Joint Coordinating Committee (JCC)

JCC will be held at the commencement and the end of the Project in order to discuss the framework, operation, review and assessment of the Project

**Table 3-1. Outline of JCC**

| | | | |
|---|---|---|---|
| Period | July, 2022<br>December, 2022 | Place | Online |
| Objective | • To deliberate and approve the work plan of the Project<br>• To review the overall progress<br>• To make suggestions and advice necessary for the important issues<br>• To check the outputs and approve various output documents. | | |
| Content | • Approval of the Project activities<br>• Approval of Work Plan<br>• Deliberation and approval of Monitoring Sheet<br>• Deliberation and approval of outcome indicators and values in PDM<br>• Implementation of monitoring the progress of the Project | | |
| Participants | Representatives of Ministry of Health and Family Welfare and SIH, JICA headquarters, JICA Bangladesh Office, and JICA experts. | | |

#### 3-1-2 Monitoring and evaluation

Counterparts and JICA experts jointly cooperate to monitor the progress of the Project, periodically by developing monitoring sheets. Regular meetings for the Project are to be held once a week to check/ confirm the progress of the Project and fix issues when critical issues emerge. The date and time for the regular meeting will be set after consultation among the parties. Evaluation is made upon the Project Design Matrix (PDM) and Plan of Operation (PO).

#### 3-1-3 Public relations

JICA experts provide information for the internet pages of the Project on the JICA official homepage and revises it. The basic policies of the main public relations activities of this project are as follows.

**Table 3-2. Basic policy of public relations activities**

| No. | Public Relations Activities | Public Relations Media |
|---|---|---|
| 1 | Produce newsletters at milestones of activities (JCC, Scheduled Care, follow-up sessions, etc.) to disseminate the progress of Project activities. | ・ JICA's Technical Cooperation Website |
| 2 | Conduct public relations activities such as JICA and other external media's interviews, contributions, and presentations at events, in consultation with the JICA as necessary. | ・Printed materials etc.<br>・Events etc. |

### 3-1-4 Deliverables

Following reports will be shared with the SIH and submitted to JICA.

**Table 3-3. Deliverables**

| Reports | Submission Date |
|---|---|
| Work Plan | Within one month after the Project starts. |
| Monitoring Sheet Ver.0 | Within one month after the Project starts |
| Monitoring Sheet Ver.1 | Within three months after the Project starts |
| Progress Report | Three months after the Project starts |
| Project Completion Report | December 27 2022 |

## 3-2 Annual Plan

Annual plan is shown in the table below.

**Table 3-3. Annual Plan**

| Activities | Time |
|---|---|
| Kick-off Meeting | July 2022 |
| JCC | July 2022, December 2022 |
| Scheduled Care (1 – 2 times a week) | July - December 2022 |
| Follow-Up Session (2 times in total) | September – December 2022 |

-END-

# Appendix 6: Minutes of JCC Meeting

**MINUTES OF THE MEETING ON**
**THE 1ST JOINT COORDINATING COMMITTEE**

The 1st Joint Coordinating Committee (hereinafter referred to as "JCC") Meeting was held as a hybrid meeting on 21st September 2022 hosted by Ship International Hospital and the Project Team for "Project for Capacity Development of ICU Using Telemedicine under COVID-19 Pandemic". The major topic was to discuss and approve the Work Plan of the project and the handover process of the ICT equipment.

Dhaka, Bangladesh, 21st September, 2022

## ATTACHMENT

### Introduction / Opening Remarks

Mr. Nakagawa, Project Team Leader, introduced the participants from Japanese side. Each participant from Ship International Hospital presented themselves. Participants list is attached in Appendix 1.

Opening remarks were delivered by the Senior Consultant of Ship International Hospital, and the Senior Representative of JICA Bangladesh Office.

The Senior Consultant of Ship International Hospital expressed thankful acknowledgment for the implementation of this project in cooperating with JICA, JICA Expert Team, and Ship International Hospital, and stated her expectation for the project.

The Senior Representative of JICA Bangladesh Office reminded all the participants of the crucial role which Ship International Hospital has been assuming in combating against COVID-19 pandemic in Bangladesh and voiced expectations that this project would enhance the capacity of Ship International Hospital to respond infectious disease pandemic such as COVID-19. He also expressed his expectation for the successful progress of the project with a good collaboration between Japan and Bangladesh.

Meeting agenda is attached in Appendix 2.

### Explanation of Project's Work Plan, Schedule, and Handover Process of ICT Equipment

**Project's Work Plan and Schedule**

Mr. Tokumaru, Regional Director of Project Team, explained the purpose, activities and output of the Project. He also described the schedule of the Project.

**Handover Process of ICT Equipment**

Since it was initially considered to transfer voluntarily the ICT equipment from JICA to Ship International Hospital, Mr. Tokumaru mentioned that a meeting would be held in October among the parties concerned, JICA, Ship International Hospital, and Ministry of Health and Family Welfare to establish the direction regarding the handling of the ICT equipment in order to facilitate the transfer procedure, and that the transfer would be completed within the Project period.

The contents are shown in Appendix 3.

### Q&A Session

1. **I would like to ask about feedback on the project activities to date. (The Senior Representative of JICA Bangladesh Office)**

Mr. Moriguchi, ICU certified nurse from JICA Expert Team, reviewed that as for the

nurses, we have been able to have interactive discussions during scheduled care since the first time. He also stated that discussion points tended to be a little more medical examination, so we would like to focus on nursing care in the future.
The ICU Nurse Manager from Ship International Hospital gave us comments that scheduled care was a good opportunity to learn and has been very helpful to the nurses.
The Senior Consultant of Ship International Hospital also stated that scheduled care has been going well so far.

2. **Is there any problem with the remote implementation of this Project? Are there any measures to deal with them? (The Program Officer of JICA Bangladesh Office)**

The Senior Consultant of Ship International Hospital mentioned that since currently there are only a few critically ill patients with COVID-19, it would be good to deal with critically ill patients in the general ICU. She expressed that Japan was advanced in terms of medical care, so it would be great to learn about treatment and management of critically ill patients through this Project and apply to the future care in Ship International Hospital.
Mr. Tokumaru stated that Japanese side and Ship International Hospital have been having regular meetings to exchange information and opinions regarding this Project, and in case that we face any issues in the implementation of scheduled care or training, we would use the regular meetings to discuss and take measures to address them.

3. **Regarding the handling of ownership transfer of ICT equipment, there are three options based on the Record of Discussions. Ship International Hospital and JICA will need to discuss and proceed with this matter. (The Program Advisor of JICA Bangladesh Office)**

The Program Advisor of JICA Bangladesh Office reminded all the participants that there is not only an option of voluntary transfer of ICT equipment but also other two options. The options we can choose to deal with the ownership of ICT equipment are as follows:

1) JICA may sell the equipment to Ship International Hospital at book value if Ship International Hospital has willingness to continue the use of ICU telemedicine service; or,
2) JICA may remove them from the project site if Ship International Hospital no longer needs ICU telemedicine service; or
3) JICA might be able to hand over them to Ship International Hospital as a voluntary transfer only if JICA and Ship International Hospital agree on such arrangement with the Ministry of Health and Family Welfare.

   The discussion how to choose the options shall be made soon between Ship International Hospital and JICA Bangladesh Office.

**Closing Remarks**

Closing remark was made by Mr. Nakagawa. He stated that he was sure that all participants at today's JCC have gained a better understanding of this project. He also expressed his expectations that this project could strengthen the intensive care capacity of Ship International Hospital and thereby strengthen the healthcare system in Bangladesh through scheduled care, which is the main activity of this project. He closed his closing remarks with the words of hope to ensure the effective implementation of this project in cooperation with each side.

End

# APPENDIX

**APPENDIX 1. Participant List**

**APPENDIX 2. Agenda**

**APPENDIX 3. Presentation Documents**

**PARTICIPANT LIST OF 1ST JCC MEETING** 21 September, 2022

| Affiliation | Name | Position |
|---|---|---|
| Ship International Hospital | | Deputy Director Medical Administration,<br>Project Coordinator |
| Ship International Hospital | | Clinical Engineer,<br>Project Coordinator |
| Ship International Hospital | | COVID ICU Doctor,<br>Coordinator for COVID ICU Doctors |
| Ship International Hospital | | ICU Doctor,<br>Coordinator for General ICU Doctors |
| Ship International Hospital | | COVID Unit Doctor,<br>Coordinator for COVID Doctors |
| Ship International Hospital | | Nursing Manager,<br>Coordinator for ICU Nurses |
| JICA Headquarters<br>Portfolio Management Division,<br>Private Sector Partnership and Finance Department | | Senior Diretor |
| JICA Headquarters<br>Portfolio Management Division,<br>Private Sector Partnership and Finance Department | | Officer |
| JICA Headquarters<br>Portfolio Management Division,<br>Private Sector Partnership and Finance Department | | Deputy Director |
| JICA Headquartes<br>Office for STI & DX,<br>Governance and Peacebuilding Department | | Deputy Director |
| JICA Bangladesh Office | | Senior Representative |
| JICA Bangladesh Office | | Program Advisor |
| JICA Bangladesh Office | | Program Officer |
| JICA Bangladesh Office | | Program Officer |
| C.D.C. Interntional | Mr. Hiroaki Nakagawa | Team Leader / Remote-ICU Services Planning |
| T-ICU | Dr. Yoshihiko Konoike | Remote Intensive care / Remote-ICU Planning / Doctor |
| T-ICU | Mr. Shingo Moriguchi | Remote Intensive care / Remote-ICU Planning / Nurse 1 |
| T-ICU | Mr. Kenji Ichimura | Remote Intensive care / Remote-ICU Planning / Nurse 2 |
| C.D.C. Interntional | Mr. Shuji Tokumaru | Regional Director for Asis-Pacific / Monitoring |
| C.D.C. Interntional | Ms. Ayako Nakazato | Teaching Materials / Public Relations |
| C.D.C. Interntional | Mr. Yuji Takada | Remote-ICU Telecommunication System |
| C.D.C. Interntional | Ms. Fuki Fujiwara | Remote-ICU Service Management / Public Relations |

**Agenda of Joint Coordinating Committee**
**Project for Capacity Development**
**of**
**ICU Using Telemedicine under COVID-19 Pandemic**

1. Date: September 21 2022, 15:00 – 16:00 (BST), 18:00 – 19:00 (JST)
   Zoom Link: https://us06web.zoom.us/j/82225173407
   Meeting ID: 822 2517 3407

2. Participants:
   Bangladesh: Ship International Hospital (SIH)
   Japan: Japan International Cooperation Agency (JICA),
   JICA Bangladesh Office,
   Project Team (CDC, T-ICU)

3. Purpose:
   1) To discuss and approve the Work Plan of the Project
   2) To discuss and approve the handover process of ICT equipment

Meeting Agenda MC: Ms. Fuki Fujiwara

| Local Time | content | person in charge |
|---|---|---|
| 15:00～15:10 (10 min.) | Introduction of participants | Project Team Leader: Mr. Nakagawa<br>Japan: JICA, JICA Bangladesh Office, Project Team<br>Bangladesh: SIH |
| 15:10～15:20 (10 min.) | Opening remarks (Bangladesh) | Senior Consultant, SIH |
| 15:20～15:30 (10 min.) | Opening remarks (Japan) | Senior Representative, JICA Bangladesh Office |
| 15:30～15:45 (15 min.) | Explanation of<br>- Project's work plan,<br>- Project Schedule,<br>- Handover process of ICT equipment | Regional Director: Mr. Tokumaru |
| 15:45～15:55 (10 min.) | Q&A | |
| 15:55～16:00 (5 min.) | Confirmation of the Work Plan and Handover process of ICT equipment | Regional Director: Mr. Tokumaru |
| 16:00 | Closing remarks | Project Team Leader: Mr. Nakagawa |

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# 1st Joint Coordinating Committee Meeting

## Project for Capacity Development of ICU using Telemedicine under COVID-19 Pandemic Bangladesh

**Ship International Hospital**
**Japan International Cooperation Agency**
**CDC International, T-ICU**

**21 September 2022**

## Background of the Project

Under the COVID-19 Pandemic in Bangladesh from 2020, the project aims to contribute to **enhancing the capacity of medical services in Bangladesh against the COVID-19.**

Considering the potential surge of COVID-19 patients, there is a risk that the medical capacity in hospitals including human resources and facilities, **especially at intensive care treatments for seriously ill patients, could be exposed to additional pressure.**

Japan East West Medical College Hospital, currently known as Ship International Hospital (SIH), and JICA have thus confirmed that the Project will **introduce a component of telemedicine system in intensive care units** (ICU) at SIH, which is a private general hospital that received funding from JICA in 2018, in Bangladesh, which could be an innovative and effective approach to mitigate the potential resource constraints by **enhancing case management capacity in quality and quantity.**

## Outline of the Project

| | |
|---|---|
| **Title** | **Project for Capacity Development of ICU Using Telemedicine under COVID-19 Pandemic** |
| **Duration** | July – December 2022 |
| **Place/CP** | Ship International Hospital (SIH) |
| **Beneficiary** | Direct: ICU doctors & nurses in SIH<br>Ultimate: ICU patients in SIH |

**Project Goal & Purpose**

The Project provides the **ICU telemedicine** between Japan and SIH (D2D/N2N online education and consultation), **for strengthening the SIH medical capacity** to manage critically ill patients with COVID-19 and other diseases, thereby establishing **a better medical system in SIH**.

**Outputs**

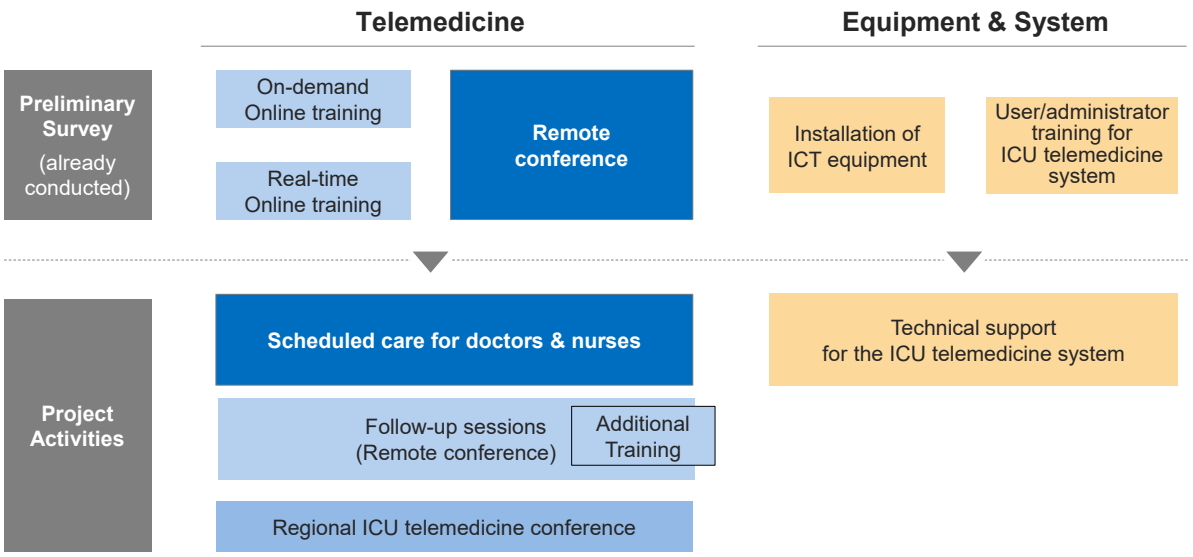
- SIH doctors & nurses understands how to implement telemedicine
- Capacity of SIH doctors & nurses strengthened through telemedicine
- Enabling environment in SIH to maintain telemedicine activities



## Output 1, 2 and 3 and Activities

| Activities | | Month | Ⅲ 7 | 8 | 9 | Ⅳ 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|
| **OP1**: Medical professionals (including doctors and nurses) in SIH understand the basics on intensive care and the functions of ICU telemedicine system, and are ready to receive remote D2D/N2N technical advice and support. | | | | | | | | |
| | **1.1** Implement follow-up sessions | Plan | | | → | → | → | |
| | **1.2** Provide training modules and training | Plan | | → | → | → | → | → |
| **OP2**: Capacity of medical professionals is enhanced through remote D2D/N2N technical advices and consultations conducted by the JICA expert team including certified critical care physicians and nurses. | | | | | | | | |
| | **2.1** Implement scheduled care | Plan | → | → | → | → | → | → |
| | **2.2** Monitor remote-ICU service | Plan | → | → | → | → | → | → |
| **OP3**: The environment of SIH including the remote-ICU telecommunication system is maintained in order to make good use of remote D2D/N2N trainings and technical advice. | | | | | | | | |
| | **3.1** Operation check and technical support on Remote-ICU Telecommunication System | Plan | → | → | → | → | → | → |

## Main Activities of the Project






## Project Schedule

**Annual Plan**

- **Kick-off Meeting** : July 2022
- **Joint Coordination Committee(JCC)** : September 2022, December 2022
- **Scheduled Care (1 – 2 times a week)** : August - December 2022
- **Additional Training for Nurse( Once a week)** : October 2022
- **Follow-Up Session (2 times in total)** : September – December 2022

## Outline of the Scheduled Care

**Japanese intensive care specialists will provide advice based on information such as biometric information, physiological function test results, specimen test results, and imaging test data provided by the hospital.**

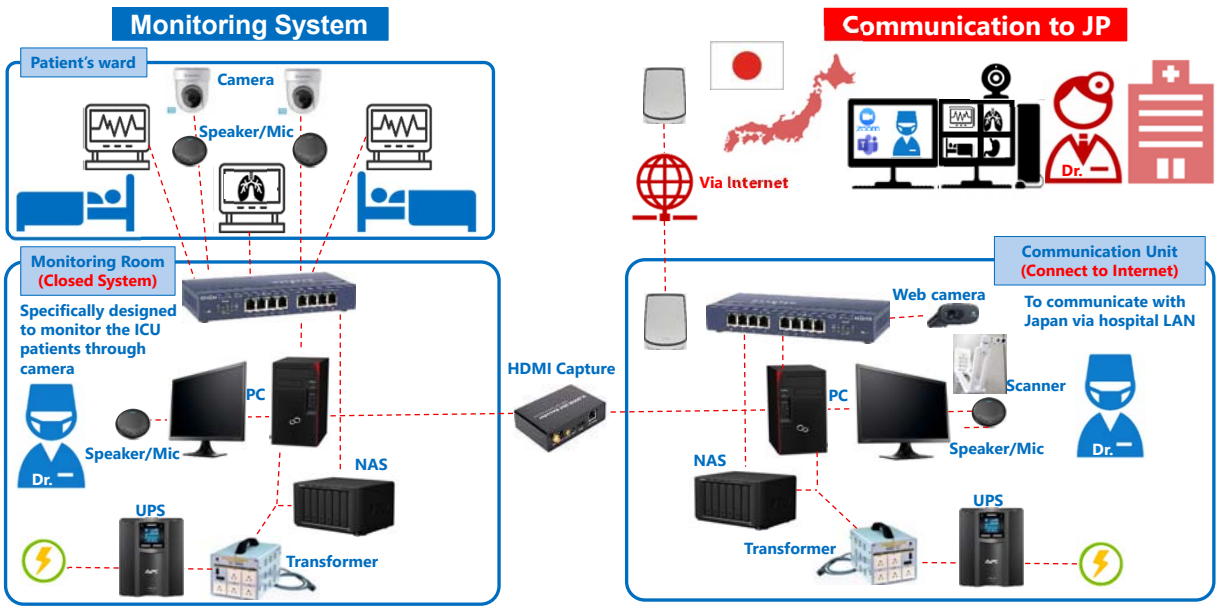
① Frequency : Hold a routine conference with Doctors and Nurses separately
Dr: Every Monday 14:00-, Nurse:Every Wednesday 14:00

② Content : We will discuss the diagnosis and / or management of ICU patients.

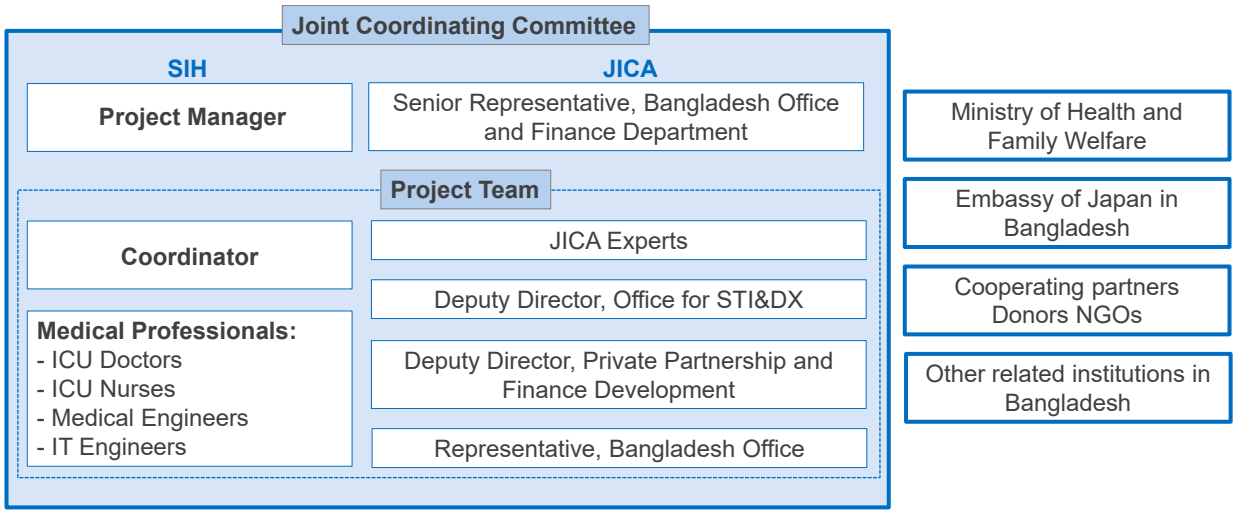
③ Intensive care specialist from Japan : Doctor's Scheduled Care ⇨ one ICU doctor
: Nurse's Scheduled Care ⇨ one ICU nurse



## ICT System



## Implementation Structure (SIH and JICA)






## Core Members of the Project

| Assigned Role | Name of Focal Point | Job Title/Position |
|---|---|---|
| Project Manager | | Director Administration |
| Project Coordinator | | Deputy Director of Medical Administration |
| Project Coordinator | | Clinical Engineer |
| Coordinator for COVID-19 Doctors | | COVID-19 Unit in charge Doctor |
| Coordinator for COVID-19 ICU Doctors | | COVID-19 ICU in charge Doctor |
| Coordinator for General ICU Doctors | | ICU in charge Doctor |
| Coordinator for ICU Nurses | | Nursing Manager |
| ICT Equipment for Telemedicine | | IT Engineer |

## JICA Experts

| Person in charge | Name | Company |
|---|---|---|
| Team Leader/ Remote-ICU Services Planning | Mr. Hiroaki Nakagawa | CDC |
| Remote Intensive care / Remote-ICU Planning / Doctor | Dr. Yoshihiko Konoike | T-ICU |
| Remote Intensive care / Remote-ICU Planning /Nurse 1 | Mr. Shingo Moriguchi | T-ICU |
| Remote Intensive care / Remote-ICU Planning /Nurse 2 | Mr. Kenji Ichimura | T-ICU |
| Regional Director for Asia-Pacific / Monitoring | Mr. Shuji Tokumaru | CDC |
| Remote-ICU Service Management / Public Relations | Ms. Fuki Fujiwara | CDC |
| Remote-ICU Management | Ms. Kaniz Fatema | T-ICU |
| Remote-ICU Telecommunication System | Mr. Yuji Takada | CDC |
| Teaching Materials/ Public Relations | Ms. Ayako Nakazato | CDC |



## Expected Inputs from SIH

1. Assign **Appropriate and sufficient medical professionals and ICT engineers** to get involved in and gain benefit from the Project

2. Ensure **basic utilities** (electricity, internet connection..), **running expenses** and other required inputs (if any) to make the Project happen and sustain.

3. Cooperate with JICA in **negotiation with the Government of Bangladesh** (MoHFW) to confirm that the installed ICT equipment procured by JICA under the Preliminary Survey can be handed over to SIH with the concurrence/acknowledgement by the government.

   - **A kick-off meeting** among JICA, SIH and MoHFW should be arranged in October. Determine the direction of the handling of ICT equipment within the first two months.
   - **An official decision** via letter by MoHFW should be delivered by October-November.

## Basic Policy of Public Relations Activities

**Public relations**

JICA experts provide information for the internet pages of the Project **on the JICA official homepage** and update it. The basic policies of the main public relations activities of this project are as follows.

| | Public Relations Activities | Public Relations Media |
|---|---|---|
| 1 | Produce newsletters at milestones of activities (JCC, Scheduled Care, follow-up sessions, etc.) to disseminate the progress of Project activities. | ・JICA's Technical Cooperation Website |
| 2 | Conduct public relations activities such as JICA and other external media's interviews, contributions, and presentations at events, in consultation with the JICA as necessary. | ・Printed materials etc.<br>・Events etc. |



**আপনার মনোযোগের জন্য আপনাকে ধন্যবাদ!**

**Thank you for your attention !**

**MINUTES OF THE MEETING ON**
**THE 2ND JOINT COORDINATING COMMITTEE**

The 2nd Joint Coordinating Committee (hereinafter referred to as "JCC") Meeting was held as a hybrid meeting on 22nd December, 2022 hosted by Ship International Hospital and the Project Team for "Project for Capacity Development of ICU Using Telemedicine under COVID-19 Pandemic" (hereinafter referred to as "Project"). The major topic was to confirm the achievements of the Project and to make a final evaluation of the Project.

Dhaka, Bangladesh, 22nd December, 2022

## ATTACHMENT

### Introduction / Opening Remarks

Ms. Fuki Fujiwara, Remote ICU Service Management of JICA Experts team, introduced the participants from Japanese side. Each participant from Ship International Hospital presented themselves. Participants list is attached in Appendix 1.

Opening remarks were delivered by the Director of Ship International Hospital and Project Manager of the Project, and the Senior Representative of JICA Bangladesh Office.

The Director of Ship International Hospital expressed his appreciation for the latest technical support given through the Project with the support of JICA and JICA Experts team. He also mentioned that all medical professions at Ship International Hospital who participated in the Project were satisfied with the technical support, and stated his expectation that the knowledge and skills gained through the Project could be utilized other clinical areas, including cardiovascular surgery ICU, at Ship International Hospital.

The Senior Representative of JICA Bangladesh Office appreciated all the project members' efforts for the Project, and also stated that at this meeting we would discuss the challenges and lessons learned from the Project in order to apply them to the future.

Meeting agenda is attached in Appendix 2.

### Confirmation of Achievement of the Project

**Project Purpose & Outputs, and Brief Overview of Achievements**

Mr. Tokumaru, Regional Director of JICA Experts team, reminded all the participants of the project purpose and outputs. He also briefed the achievements of the Project in accordance with a timetable.

**Achievements**

The Project Coordinator of Ship International Hospital reported on the achievements based on each indicator for each outcome. The contents are shown in Appendix 3.

### Project Evaluation

The JICA Experts team shared the results of the project evaluation based on the Operational Performance Indicator, and provided evaluation comments on the physicians and nurses respectively.

**Physicians**

Physicians from Ship International Hospital prepared presentation materials very organized and clearly when dealing with past cases. Although the number of patients in the ICU was small and we had limited opportunities to conduct the scheduled care, which discuss the treatment and

management of the patient(s) currently admitted in the ICU, JICA Experts team hope that this medical support and training will be useful for intensive care in the field.

**Nurses**

The number of ICU nurses who participated in the scheduled care gradually increased, and their motivation to participate in the Project was evident. Many of the ICU nurses are young and do not have much experience, so it must have been difficult for them to keep up with the pace of the project activities (such as the scheduled care and training) conducted in a short period of time. However, they have learned a lot from the Project, and JICA Experts team hope that they will be able to use the knowledge they gained through the scheduled care in practice. Although we work in different places, our roles as nurses are the same. JICA Experts team hope we can grow together to provide better nursing care.

## Comments from Physician and Nurse of Ship International Hospital

**Physician**

This project, including the scheduled care, has been very helpful in improving patient care and management in Ship International Hospital. We have much to learn from the Japanese specialists, and we would like to implement their practices in Bangladesh to improve patient care and management.

**Nurse**

We have learned a lot from the training and the scheduled care and are able to provide nursing care more efficiently than before. Also, thanks to the detailed explanation of nursing care in the scheduled care, we are able to provide nursing care more accurately.

## Recommendations from JICA Expert team to Ship International Hospital

Mr. Tokumaru provided the following recommendations to Ship International Hospital.

1) To continue trainings at Sip International Hospital using the educational material modules which JICA Experts team provided in the Project.
2) To take a necessary measure to improve retention rate so that the overall goal of the Project could be achieved.

## Q&A Session

**1. I would like to hear feedback/comments on the 2nd recommendation given by JICA Expert team from Ship International Hospital. (The Senior Representative of JICA Bangladesh Office)**

The ICU Registrar stated that although ICU patients were the target of medical support in the Project, we would like to discuss clinical cases involving a variety of patients, including children

and pregnant women.

The ICU Nurse Manager gave us comments that she wanted to continue to have the scheduled care on a bi-weekly basis to improve skills. She also stated that she would like to have a training on specific topics such as medicine used in intensive care and reading of medical imaging, and if possible, would like to have Japanese nurses come to the site to provide face-to-face training and medical support.

The Project Coordinator answered that when there were no patients in the ICU, preparation of past cases was a kind of burden for physicians, but once they were able to discuss the patients in the ICU, remote ICU support was very helpful for the on-site physicians and nurses in performing their duties. He also mentioned that the project period was short and limited, which made it difficult for the physicians and nurses to coordinate with their main jobs, so if a certain amount of time is given for preparation, they could participate in project activities in good time.

2. **Does Ship International Hospital have any plan to have training in the future? (The Senior Representative of JICA Bangladesh Office)**

The ICU Registrar answered that he thought this type of training should be continued in the future, and if possible, he would like to have training for a longer period of time, either online or in-person.

## Closing Remarks

Closing remark was made by Mr. Hiroaki Nakagawa, JICA Experts team leader. He expressed his sincere appreciation to all the participants for their participation in the meeting today, and stated that we could share the achievements and results of the Project. He mentioned that even though the project period was really short, all medical professionals at Ship International Hospital have gained the latest knowledge from the scheduled care and training and could utilize it to treat and manage critically ill patients. He finally made a most cordial acknowledgement to all from Ship International Hospital and JICA for their support in bringing the Project successful conclusion.

End

# APPENDIX

**APPENDIX 1. Participant List**

**APPENDIX 2. Agenda**

**APPENDIX 3. Presentation Documents**

**PARTICIPANT LIST OF 1ST JCC MEETING** 22 December, 2022

| Affiliation | Name | Position |
|---|---|---|
| Ship International Hospital | | Director,<br>Project Manager |
| Ship International Hospital | | Director,<br>Project Coordinator |
| Ship International Hospital | | Biomedical Engineer,<br>Project Coordinator |
| Ship International Hospital | | ICU-Registrar |
| Ship International Hospital | | Nurse Manager,<br>Coordinator for ICU Nurses |
| Ship International Hospital | | ICU Nurse |
| Ship International Hospital | | ICU Nurse |
| Ship International Hospital | | ICU Nurse |
| JICA Headquarters<br>Portfolio Management Division,<br>Private Sector Partnership and Finance Department | | Senior Diretor |
| JICA Headquarters<br>Portfolio Management Division,<br>Private Sector Partnership and Finance Department | | Officer |
| JICA Headquarters<br>Portfolio Management Division,<br>Private Sector Partnership and Finance Department | | Deputy Director |
| JICA Bangladesh Office | | Senior Representative |
| JICA Bangladesh Office | | Representative |
| C.D.C. Interntional | Mr. Hiroaki Nakagawa | Team Leader / Remote-ICU Services Planning |
| T-ICU | Dr. Yoshihiko Konoike | Remote Intensive care / Remote-ICU Planning / Doctor |
| T-ICU | Mr. Kenji Ichimura | Remote Intensive care / Remote-ICU Planning / Nurse 2 |
| T-ICU | Ms. Kaniz Fatema | Remote-ICU Management |
| C.D.C. Interntional | Mr. Shuji Tokumaru | Regional Director for Asis-Pacific / Monitoring |
| C.D.C. Interntional | Ms. Ayako Nakazato | Teaching Materials / Public Relations |
| C.D.C. Interntional | Mr. Yuji Takada | Remote-ICU Telecommunication System |
| C.D.C. Interntional | Ms. Fuki Fujiwara | Remote-ICU Service Management / Public Relations |

**Agenda of 2nd Joint Coordinating Committee Meeting**
**Project for Capacity Development**
**of**
**ICU Using Telemedicine under COVID-19 Pandemic**

1. Date: December 22, 2022, 14:00 – 15:00 (BST), 17:00 – 18:00 (JST)
   Zoom Link: https://us06web.zoom.us/j/85034290628
   Meeting ID: 850 3429 0628

2. Participants:
   Bangladesh: Ship International Hospital (SIH)
   Japan: Japan International Cooperation Agency (JICA),
   JICA Bangladesh Office,
   Project Team (CDC, T-ICU)

3. Purpose:
   1) To confirm the achievements of the Project
   2) To make a final evaluation of the Project

Meeting Agenda MC: Ms. Fuki Fujiwara

| Local Time | content | person in charge |
|---|---|---|
| 14:00～14:05 (5 min.) | Introduction of participants | Japan: JICA Headquarters, JICA Bangladesh Office, Project Team<br>Bangladesh: SIH |
| 14:05～14:10 (5 min.) | Opening remarks (Bangladesh) | Project Manager, SIH |
| 14:10～14:15 (5 min.) | Opening remarks (Japan) | Senior Representative of JICA Bangladesh Office |
| 14:15～14:25 (10 min.) | Presentation of achievement of Project | Project Coordinator, SIH |
| 14:25～14:35 (10 min.) | Evaluation of Project<br>- Evaluation based on OPI | Mr. Shuji Tokumaru, Regional Director of Project Team<br>Dr. Konoike, Intensivist<br>Mr. Moriguchi / Mr. Ichimura, Certified Nurse in Intensive Care |
| 14:35～14:45 (10 min.) | Comments and recommendations | SIH,<br>Mr. Shuji Tokumaru, Regional Director of Project Team |
| 14:45～14:55 (10 min.) | Q&A | |
| 14:55～15:00 (5 min.) | Closing remarks | Mr. Hiroaki Nakagawa, Project Team Leader |

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# Joint Coordinating Committee Meeting

## Project for Capacity Development of ICU using Telemedicine under COVID-19 Pandemic Bangladesh

Ship International Hospital
Japan International Cooperation Agency
CDC International, T-ICU

22 December, 2022

## Agenda

1. Introduction of the Participants
2. Opening Remarks
3. Achievements of the Project
4. Evaluation of the Project
5. Comments & Recommendations
6. Q & A
7. Closing Remarks

## Project Purpose and Outputs

| | |
|---|---|
| **Project Purpose** | **Medical capacity of intensive care services in SIH is strengthened in order to administrate and treat critically ill patients affected by COVID-19 and other diseases.** |
| **Output 1** | Medical professionals (including doctors and nurses) in SIH **understand the basics on intensive care** and **the functions of ICU telemedicine system,** and are ready to receive remote D2D/N2N technical advice and support. |
| **Output 2** | **Capacity of medical professionals is enhanced through D2D/N2N technical advices and consultations** conducted by the JICA expert team including certified critical care physicians and nurses. |
| **Output 3** | **The environment of SIH including the remote-ICU telecommunication system maintained** in order to make good use of remote D2D/N2N trainings and technical advice. |



## Project Activities

**Project period: 29 June, 2022 – 27 December, 2022**

| Activities | Ⅲ | | | Ⅳ | | |
|---|---|---|---|---|---|---|
| | 7 | 8 | 9 | 10 | 11 | 12 |
| **Kick-off Meeting** | 25 Jul. | | | | | |
| **JCC** | | | 21 Sep. | | | 22 Dec. |
| **Additional Training for Nurses (4 Session)** | | | | 3 – 31 Oct. | | |
| **Follow-up Session (Twice each for Physician and Nurse)** | | | | | (Dr. )28 Nov. & 19 Dec.<br>(Nr. )5 & 15 Dec. | |
| **Scheduled Care** | | (Dr. )29 Aug.<br>(Nr. )31 Aug. | | | | 26 Dec.<br>21 Dec. |
| **Remote ICU Telecommunication System User Training for Physician and Nurse** | | 8, 10, 16 Aug. | | | | |

# Achievements of the Project by Ship International Hospital

## Output 1: Training and Follow-up Session

**Follow-up session for physicians and nurses each was conducted twice.**

| | Date and Time | Subject | Number of participants |
|---|---|---|---|
| Physician | 28 Nov. 14:00-15:00 (JST 17:00-18:00) | Shock | 6 |
| | 19 Dec. 14:00-15:00 (JST 17:00-18:00) | Fluid Management | 3 |
| Nurse | 5 Dec. 14:00-15:00 (JST 17:00-18:00) | ECG Interpretation | 11 in total ICU:6, ER:5 |
| | 15 Dec. 14:00-15:00 (JST 17:00-18:00) | Post Operation Care | 21 in total ICU:8, CCU:1, Surgery: 7, NICU:1, ER: 2, General Ward: 1 |

## Output 1: PDM Verifiable Indicator

**Output 1:** Medical professionals (including doctors and nurses) in SIH understand the basics on intensive care and the functions of ICU telemedicine system, and are ready to receive remote D2D/N2N technical advice and support.

| Indicator | Number of the session | Physician | as of 20 Dec. Nurse |
|---|---|---|---|
| **Number of remote trainings and D2D/N2N advice and consultation** | Online Training | 7* | 7* |
| | Remote Conference | 1* | 1* |
| | Scheduled Care | 12 (includes 9 clinical cases) | 14 |
| | Additional Online Training | - | 4 |
| | Follow-up Session | 2 | 2 |
| | Remote ICU System User Training for ICT Engineers | 1 | 1 |
| * Conducted as a pilot activities in the preliminary survey. | Remote ICU Telecommunication System User Training for Physician and Nurse | 3 | 3 |



## Output 2: Scheduled Care

**Conducted scheduled care every Monday for physicians and every Wednesday for nurses.**
**No COVID-19 case was scheduled due to patients' availability.**
**In case that there were no patients in ICU, training session was conducted for physicians instead.**

| | Total number of session | Topics |
|---|---|---|
| **Physician** | **12** | Acute methanol intoxication, Sepsis, Acute respiratory failure, Coma, Fever, Hypothyroidism, Valvular disease, Anemia, Stevens-Johnson syndrome, Hypokalemia, Dengue fever, Metabolic acidosis, NSTEMI, Acute renal failure, Hemorrhagic cerebral vascular disease with secondary ventricular enlargement, ARDS, Cellulitis, Rheumatoid arthritis |
| **Nurse** | **14** | Acute alcohol intoxication, Aspiration pneumonia, Sepsis, MODS, Hyperkalemia, Traffic trauma, Hemothorax, Stroke, Hypertension, Severe pneumonia, Septic shock, Bronchial asthma, Electrolyte abnormalities, Cerebral hemorrhage, Dengue fever, Cellulitis, ARDS, Respiratory failure, Asthma overlap attack, Cardiogenic shock, Diabetic ketoacidosis, Alcoholic cirrhosis, Chronic kidney disease, Type 2 respiratory failure, Acute febrile illness, Viral hepatitis |

## Output 2: PDM Verifiable Indicator

**Output 2:** Capacity of medical professionals is enhanced through D2D/N2N technical advices and consultations conducted by the JICA expert team including certified critical care physicians and nurses.

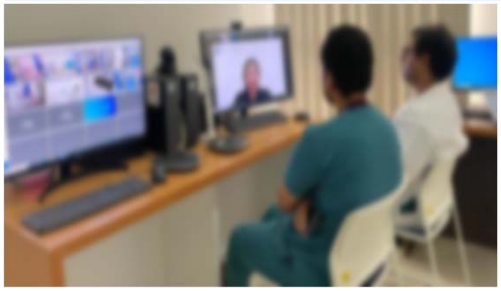
| Indicator | Number of Participants | | *as of 20 Dec. |
|---|---|---|---|
| | Training / Session | Physician | Nurse |
| **Number of the ICU medical professionals in SIH (such as doctors, nurses, and ICT engineers) who have received remote training and D2D/N2N advice and consultations** | On-demand Online Training | 2* | - |
| | Online Training | 29* | 33* |
| | Remote Conference | 8* | 5* |
| | Scheduled Care (total) | 35 | 56 |
| | Additional Online Training (total) | - | 32 |
| | Follow-up Session (total) | 9 | 14 |
| * Conducted as a pilot activities in the preliminary survey. | Remote ICU System User Training for ICT Engineers | 6 | |
| | Remote ICU Telecommunication System User Training for Physician and Nurse | 1 | 11 |



## Output 3: PDM Verifiable Indicator

**Output 3: The environment of SIH including the remote-ICU telecommunication system maintained in order to make good use of remote D2D/N2N trainings and technical advice.**

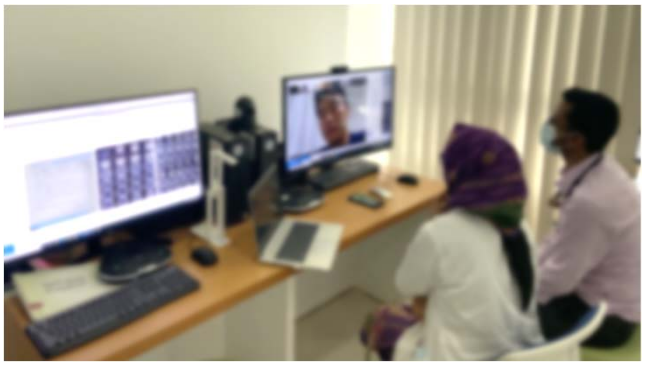
| Indicator | Results |
|---|---|
| **ICU telemedicine system has been installed and maintained functioning**. | Remote ICU telecommunication system was installed during the preliminary survey.<br>Conducted an operation check at the start of the Project and confirmed that the system functioned properly.<br>Has keep monitoring the system and provided a technical support when there were any troubles. |



## Project Purpose: PDM Verifiable Indicator

**Project Purpose: Medical capacity of intensive care services in SIH is strengthened in order to administrate and treat critically ill patients affected by COVID-19 and other diseases.**

| Indicator | Number of Patients *as of 19 Dec. |
|---|---|
| **Number of patients treated by the ICU medical professionals in SIH who have received remote training and D2D/N2N advice and consultation** | 222 patients in total: 44 COVID-19 ICU patients and 178 Non COVID-19 ICU patients |



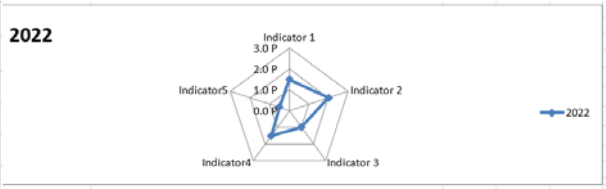


## Evaluation of the Project by JICA Expert Team

## Operational Performance Indicator

| Operational Performance Indicators (OPI) | | Date | | |
|---|---|---|---|---|
| Name of Hospital: | | Position | | |
| | | Name | | |
| Operational performance indicators | Description | Self-check 0 or 1 | JICA Expert 0 or 1 | Average |
| Indicator 1. Medical doctors are able to use the remote technologies and conduct the medical treatment with quality | Medical doctors are able to understand the usage of remote ICU communication system and share the appropriate information to the Project Experts (doctors) by using the equipment. | 1.0 | 1.0 | 1.5 |
| | Medical doctors are able to use the remote ICU communication system and communicate clearly online the situation of patients. | 1.0 | 0.0 | |
| | Medical doctors are able to make use of the advice of Project Experts for the real treatment. | 0.0 | 0.0 | |
| Indicator 2. Nurses are able to use the remote technologies and conduct the nursing with quality | Nurses are able to understand the usage of remote ICU communication system and share the appropriate information to the Project Experts (nurses) by using the equipment. | 1.0 | 1.0 | 2.0 |
| | Nurses are able to use the remote ICU communication system and communicate the situation of patients clearly. | 1.0 | 0.0 | |
| | Nurses are able to utilize the expertise/knowledge of the Project Experts for safe nursing care according to the situation on site. | 1.0 | 0.0 | |
| Indicator 3. The hospital can make use of the remote ICU communication system effectively | The hospital staff listed as the counterparts in the Monitoring sheet are able to understand the introduced remote ICU communication system. | 1.0 | 1.0 | 1.0 |
| | The hospital staff listed as the counterparts in the Monitoring sheet are able to make use of the introduced remote ICU communication system. | 0.0 | 0.0 | |
| | The hospital has the system to be able to respond appropriately to the troubles of the equipment of the introduced remote ICU communication system. | 0.0 | 0.0 | |
| Indicator 4. The hospital can add the ICU medical equipment and install the facilities and make use of them effectively as the institution (after the installation of the equipment and facilities) | Medical staff can use and control safely and correctly the introduced medical equipment. | 1.0 | 1.0 | 1.5 |
| | The hospital has the system of operating the introduced medical equipment and facilities as the institution. | 1.0 | 0.0 | |
| | The hospital is able to implement the routine maintenance of the introduced medical equipment and facilities as the institution. | 0.0 | 0.0 | |
| Indicator 5. The hospital can use the remote ICU service effectively as the institution | The hospital directors and staff have the correct knowledge and understanding of the remote ICU service as the institution. | 1.0 | 0.0 | 0.5 |
| | The hospital directors and staff are able to use appropriately the remote ICU service as the institution. | 0.0 | 0.0 | |
| | The Project stakeholders such as the Ministry of Health share the knowledge on the remote ICU service. | 0.0 | 0.0 | |
| | Average | 0.60 P | 0.27 P | 1.30 P |

**The results (achieved or not) are evaluated as 0 and 1, and the average value is displayed on a spider-gram to see changes in the technical level, and differences in evaluation between SIH and JICA Experts are discussed to encourage new insights and discoveries and motivate improvement.**






## Evaluation by Operational Performance Indicator 1

| Medical doctors are able to use the remote technologies and conduct the medical treatment with quality. | | | | |
|---|---|---|---|---|
| Indicators | Sep. 2022 | | Dec. 2022 | |
| | SIH | JICA Experts | SIH | JICA Experts |
| **Medical doctors are able to understand the usage of remote ICU communication system and share the appropriate information to the Project Experts (doctors) by using the equipment.** | 0 | 0 | 1.0 | 1.0 |
| **Medical doctors are able to use the remote ICU communication system and communicate clearly online the situation of patients.** | 1.0 | 0 | 1.0 | 1.0 |
| **Medical doctors are able to make use of the advice of Project Experts for the real treatment.** | 1.0 | 0 | 1.0 | 0 |
| **Total** | 2.0 | 0.0 | 3.0 | 2.0 |

## Evaluation by Operational Performance Indicator 2

| Nurses are able to use the remote technologies and conduct the nursing with quality. | | | | |
|---|---|---|---|---|
| Indicators | Sep. 2022 | | Dec. 2022 | |
| | SIH | JICA Experts | SIH | JICA Experts |
| **Nurses are able to understand the usage of remote ICU communication system and share the appropriate information to the Project Experts (nurses) by using the equipment.** | 0 | 1.0 | 1.0 | 1.0 |
| **Nurses are able to use the remote ICU communication system and communicate the situation of patients clearly.** | 1.0 | 0 | 1.0 | 1.0 |
| **Nurses are able to utilize the expertise/knowledge of the Project Experts for safe nursing care according to the situation on site.** | 0 | 0 | 0 | 0 |
| **Total** | 1.0 | 1.0 | 2.0 | 2.0 |



## Evaluation by Operational Performance Indicator 3

| The hospital can make use of the remote ICU communication system effectively. | | | | |
|---|---|---|---|---|
| Indicators | Sep. 2022 | | Dec. 2022 | |
| | SIH | JICA Experts | SIH | JICA Experts |
| **The hospital staff listed as the counterparts in the Monitoring sheet are able to understand the introduced remote ICU communication system.** | 1.0 | 1.0 | 1.0 | 1.0 |
| **The hospital staff listed as the counterparts in the Monitoring sheet are able to make use of the introduced remote ICU communication system.** | 0 | 0 | 1.0 | 1.0 |
| **The hospital has the system to be able to respond appropriately to the troubles of the equipment of the introduced remote ICU communication system.** | 1.0 | 0 | 1.0 | 1.0 |
| **Total** | 2.0 | 1.0 | 3.0 | 3.0 |

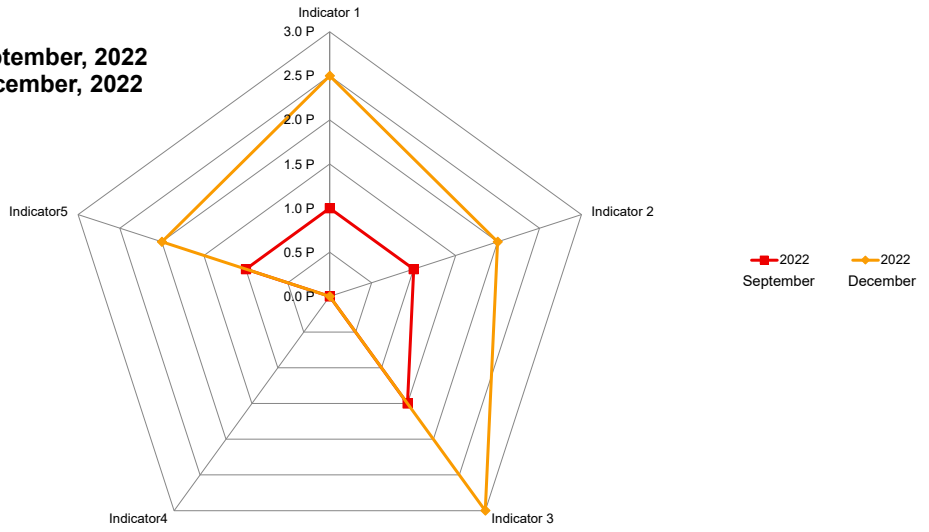
## Evaluation by Operational Performance Indicator 5

| The hospital can use the remote ICU service effectively as the institution. | | | | |
|---|---|---|---|---|
| Indicators | Sep. 2022 | | Dec. 2022 | |
| | SIH | JICA Experts | SIH | JICA Experts |
| **The hospital directors and staff have the correct knowledge and understanding of the remote ICU service as the institution.** | 1.0 | 1.0 | 1.0 | 1.0 |
| **The hospital directors and staff are able to use appropriately the remote ICU service as the institution.** | 0 | 0 | 1.0 | 1.0 |
| **Total** | 1.0 | 1.0 | 2.0 | 2.0 |



## Evaluation by Operational Performance Indicator

**1st Evaluation : September, 2022**
**2nd Evaluation: December, 2022**



## Evaluation by JICA Experts

1. **Target Value**
   **The number of participants in training, follow-up session, and scheduled care per session is 3.1 physicians, 5.1 nurses. Physician meets target value, but nurse does not meet it. (3 physicians / session, 6.6 nurses / session). Those who participated more than 4 sessions of training, follow-up session, and scheduled care will be received a certificate of participation. 7 physicians and 7 nurses are qualified to receive it as of 21 Dec. These results indicate that some of the goals were met.**

2. **Physician**
   **Participants actively participated in discussions and showed a positive attitude in learning. Physicians have basic knowledge and learned about practices in Japan through scheduled care and training, which have led to increased expertise of SIH physicians. However, the frequent transfer or turnover were sometimes hindrance of smooth technical cooperation.**

3. **Nurse**
   **While many nurses are young and still in the process of gaining experience, they had voluntary study session after training / scheduled care, and put into practice what they have learned through this project. They have lots of potential for improving their skills utilizing the knowledges gained from the project.**



## Comments & Recommendations by Ship International Hospital and JICA Expert Team

## Comments from Ship International Hospital

1. Thank you for the wonderful project. Such a project is essential and has been very helpful for continuous development of doctors, nurses and other healthcare staff. (Dr.)
2. Case discussions are very interactive, strong and well formed, and reflects the similarities and differences in medical practice here in Bangladesh and abroad. (Dr.)
3. We gained more confidence in serving our patients, as most consultants appreciated our work. Their feedback empowers the medical team at Ship International hospital. (Dr.)
4. Overseas doctors are all experts, and very helpful with our queries. The training sessions help us recapitulate the knowledge we possess and helps sharpen our skills. (Dr.)
5. We find the sessions very motivating and inspires us to serve our patients in the face of all limitations. (Dr.)
6. We gather more confidence after the day of discussion and done bedside task more efficiently for which we get the appreciation from our consultant. (Nr)



## Recommendations to Ship International Hospital

1. JICA Experts request the SIH to disseminate knowledges and techniques to the other medical professionals utilizing the training materials which the Project provided to strengthen critical care in the SIH.
2. JICA Experts recommend the SIH to take necessary measures to improve the retention of medical professionals so that the SIH is able to sustain the project results and develop medical professionals, thereby overall goal could be expected to attain.

আপনার মনোযোগের জন্য আপনাকে ধন্যবাদ!

Thank you for your attention !



## Reference: SIH's Requests and Challenges

## Requests from Ship International Hospital

1. To consider continuation of TEL-ICU sessions on a weekly/bi-weekly basis. (Dr.)
2. To have more focused training on relevant topics in intensive care/critical care medicine. (Dr.)
3. Sessions on imaging modalities (bedside ECHO, POCUS) and radiology (CT/MRI). (Dr.)
4. Starting clinical audits and quality improvement plans (QIP) for better patient care. (Dr.)
5. Adjustment of duty roster to coincide with TEL-ICU sessions for attending doctors. (Dr.)
6. We required to know more about infection control practice. (Nr)
7. To be consider critical care area related topic such as arterial blood gas analysis, management of ventilator patient's, respiratory status assessment in bedside. (Nr)
8. If possible Japanese nurse will provide bedside patient assessment. (Nr.)



## SIH's Challenges

1. Adjustment of duty roster to coincide with TEL-ICU sessions for attending doctors. (Dr.)
2. Lack of full time multi-disciplinary support from mid-level doctors in other departments. (Dr.)
3. Lack of full team of doctors, starting from juniors to mid-level. Lack of respiratory therapists. (Dr.)
4. Improved patient transfer services in and out of the hospital. (Dr.)
5. To develop nurse's knowledge for efficiently manage any kind of critical patients with understanding of maximum parameters of the patient's without error. (Nr)
6. The nurse's turnover is high due to Bangladesh government recruitment, so that retention is sometimes difficult. (Nr)
7. Understanding capacity of our nurses low due to language problems (English skills). (Nr)