Republic of Tajikistan

Data Collection Survey for Training (Distance Learning) Needs on Prevention of Hospital-Acquired Infections in the Republic of Tajikistan

Final Report

February 2022

Japan International Cooperation Agency (JICA)

Koei Research & Consulting Inc.
Digital Knowledge Co., Ltd.

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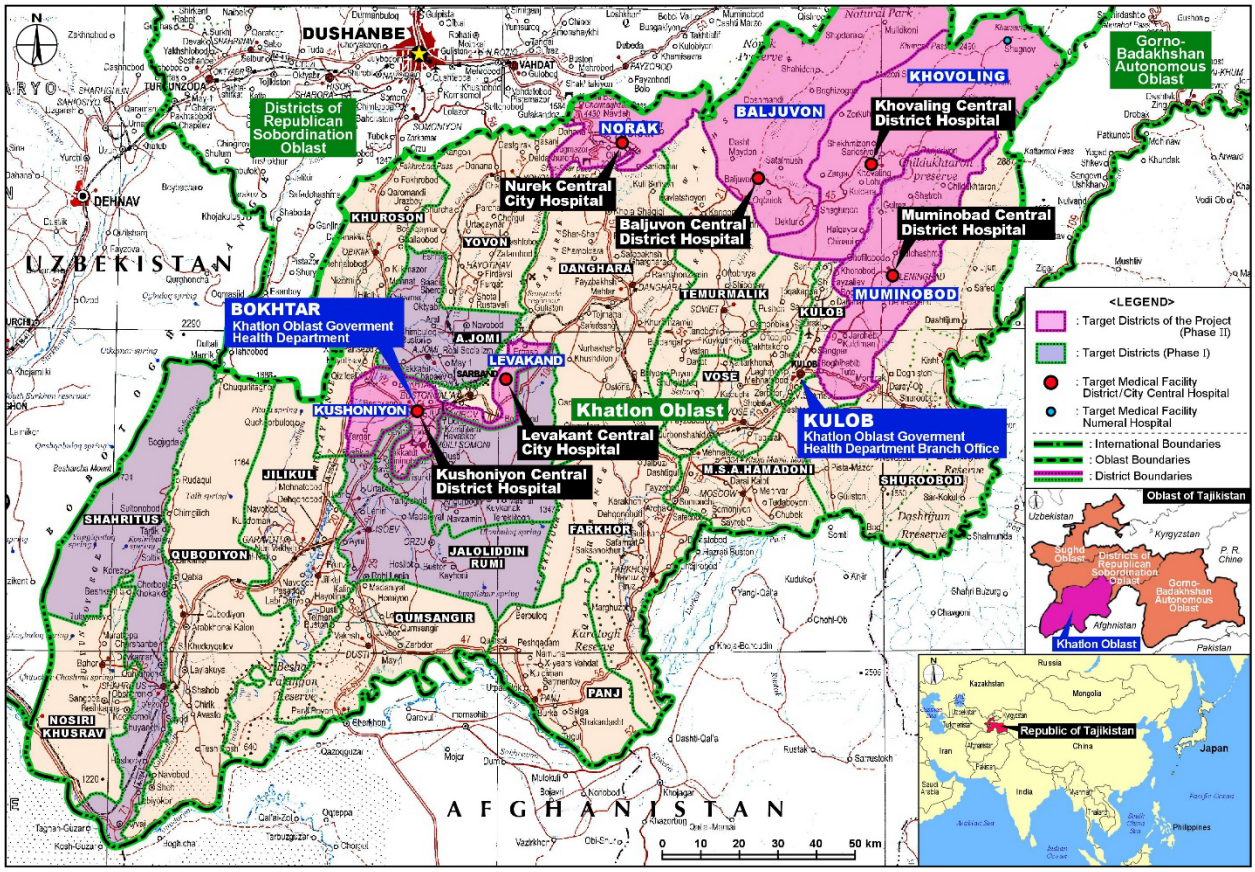
The contents of this report are based on the analysis of documents and information collected in Tajikistan and Japan between January 2021 and February 2022. The recommendations are the suggestions of the Survey Team and do not represent the cooperation strategy or policy of JICA.



Map of Survey Area

List of Abbreviations

CDN	Content Delivery Network
COVID-19	Coronavirus Disease 2019
F/R	Final Report
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
HAI	Healthcare-associated infections
HIV	human immunodeficiency virus
HMHB	Healthy Mother Healthy Baby
ICC	Infection Control Committee
ICT	Infection Control Team
ICU	Intensive Care Unit
IPC	Infection Prevention and Control
IPCAF	Infection Prevention and Control Assessment Framework
IT	Information Technology
IT/R	Interim Report
JICA	Japan International Cooperation Agency
LMS	Learning Management System
MOHSPP	Ministry of Health and Social Protection of the People
MRSA	methicillin-resistant Staphylococcus aureus
PC	Personal Computer
PPT	PowerPoint
SES	Sanitary Epidemiological Surveillance Services
SNS	Social Networking Service
SOP	Standard Operating Procedures
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

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Chapter 1 Outline of the Training

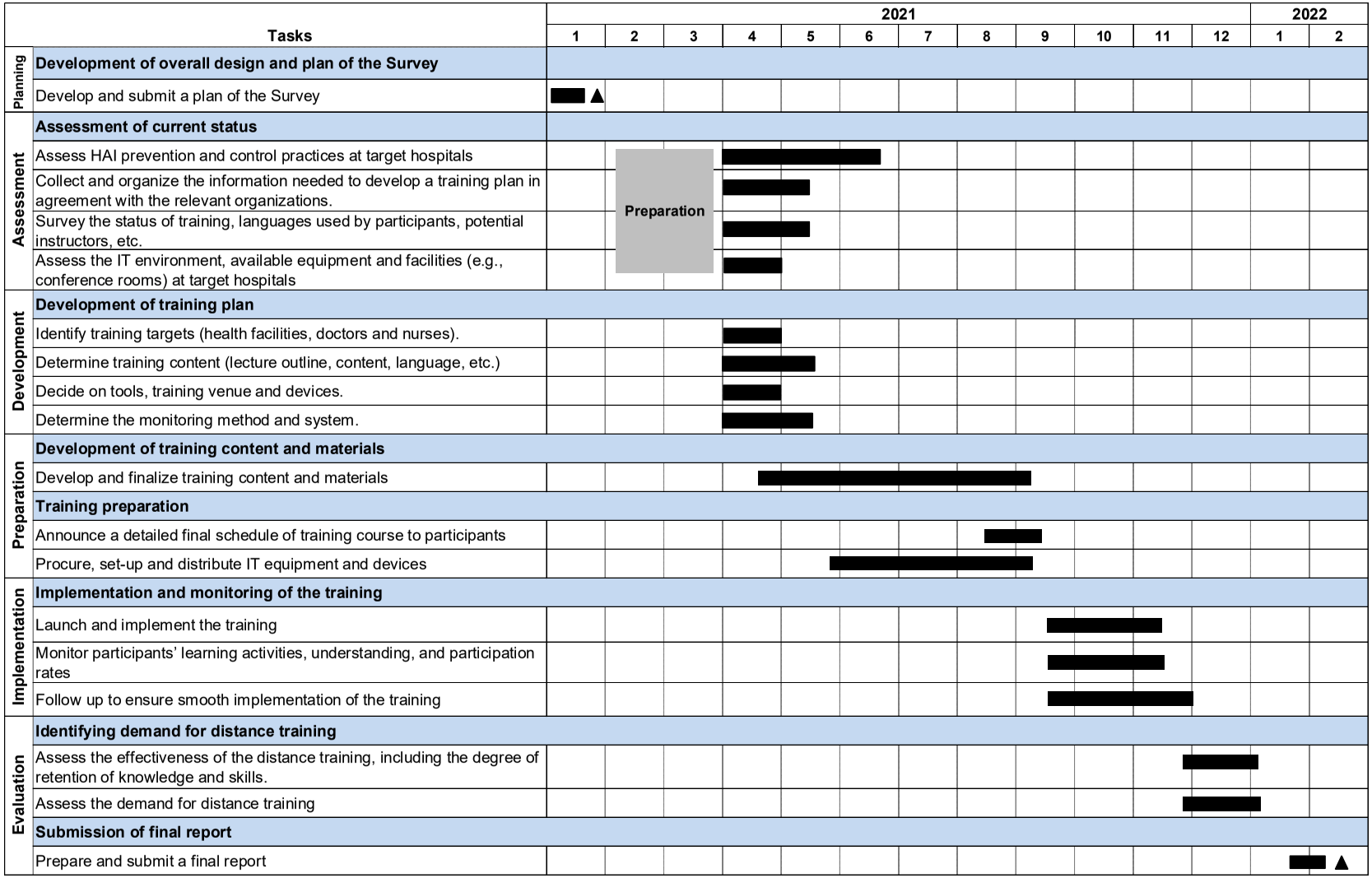
1.1 Background and Objectives

The ongoing Coronavirus Disease 2019 (COVID-19) pandemic has drawn renewed attention to the importance of healthcare-associated infection (HAI) prevention and control worldwide. However, in Central Asia, HAI control measures have not been thoroughly implemented, and guidelines and infrastructure for HAI prevention and control have not yet been sufficiently developed. Therefore, there remain challenges for healthcare workers to acquire basic knowledge and skills and improve the practice. In addition, while the COVID-19 pandemic has restricted the movement of people, the Japan International Cooperation Agency (JICA) has started a distance training program to provide training opportunities. However, since distance training is a new initiative, it is necessary to verify its demand as well as the necessary communication environment and effective implementation methods.

Against this backdrop, the "Data Collection Survey for Training (Distance Learning) Needs on Prevention of Hospital-Acquired Infections in the Republic of Tajikistan" (hereinafter referred to as "the Survey") has been conducted to consider the full-scale implementation of distance training in Central Asia in the future. The distance training on HAI prevention and control (hereinafter referred to as "the training") was conducted on a trial basis as part of the Survey. The objectives of the Survey are threefold as follows:

1 To assess the current status of HAI prevention and control and the information technology (IT) and communication infrastructure required for distance learning.
2 To implement distance training on HAI prevention and control for healthcare workers on a trial basis.
3 To assess the demand for distance training in the health sector, identify good practices and challenges, and learn lessons for introducing effective and efficient distance training in Tajikistan and the Central Asian region in the future.

In order to achieve the three objectives above, a series of tasks such as the formulation of the survey plan, assessment on current status, development of the training plan, preparation of the training content and materials, preparation, implementation and monitoring of the training, and assessment on demand for the distance training was carried out as shown in Figure 1-1.



Source: The Survey Team

Figure 1-1 Overall Plan of the Survey

1.2 Training Schedule

The training was conducted over a period of eight weeks, from 13 September 2021 to 5 November 2021. The training was basically on-demand and self-paced individual learning except for the online live lectures.

1.3 Training Target

The target facilities for the Survey and the training were the six secondary-level hospitals in Khatlon Oblast covered by JICA's technical cooperation project "Project for Improving Maternal and Child Health Care System in Khatlon Oblast Phase 2" (2017-2022) (hereinafter referred to as "Maternal and Child Health Project"). A total of 111 healthcare workers (e.g., doctors, nurses) working in the six target hospitals participated in the training (Table 1-1).

Table 1-1 Summary of Training Participants

Hospital	Number of Participants	Number of Participants by Occupational Category
Nurek Central City Hospital	16	11 doctors, 2 nurses, 1 radiologist, 1 laboratory technician, 1 administrative staff
Baljuvon Central District Hospital	12	8 doctors, 2 nurses, 1 dentist, 1 administrative staff
Khovaling Central District Hospital	19	8 doctors, 8 nurses, 1 midwife, 1 radiologist, 1 administrative staff
Muminobad Central District Hospital	23	2 doctors, 21 nurses
Kushoniyon Central District Hospital	22	7 doctors, 14 nurses, 1 administrative staff
Levakant Central City Hospital	19	15 doctors, 4 nurses

Source: The Survey Team

1.4 Training Themes and Contents

Table 1-2 shows the lecture themes and contents of the training. The training covered the basics of HAI prevention and control. The language of the training was Tajik.

Table 1-2 Lecture Themes and Contents (Summary)

Lecture Theme	Contents
Introductory Orientation (online live lecture)	• Orientation of the training (how to use the system, how to proceed with the course, etc.), speeches by representatives of each hospital, and others.
1 Definition and Types of HAI	• Definition of HAI, types of HAI, pathogens, routes of transmission, etc.
2 Infection Prevention and Control (IPC) Program	• Significance and content of the IPC program, HAI prevention and control practices, and duties of the hospital organizations • Infection Control Teams (ICT) in a Japanese hospital (case study)
3 Clinical Microbiology Testing	• Basics of clinical microbiology, the role of clinical microbiology laboratory, drug susceptibility testing
4 Outbreak Prevention and Management (online live lecture)	• Basic procedures for surveillance and outbreak response • Monitoring of HAI outbreaks in the hospitals and measures to prevent the spread of infection
5 Cleaning, disinfection and sterilization	• Methods and procedures of cleaning, disinfection and sterilization of medical devices and equipment, etc.
6 Waste Management	• Classification of wastes, treatment of infectious wastes, incineration, landfill, etc.
7 Prevention of HAI	• Surgical site infection control, indwelling bladder catheter-related urinary tract infection control, ventilator-related pneumonia control, etc.
8 Standard Precautions	• Hand hygiene, use of personal protective equipment (gloves, masks/goggles, etc.), preventive measures by route of transmission, etc.

Lecture Theme	Contents
9 Built Environment in Health Facilities (Environmental Cleaning and Disinfection, etc.)	• Cleaning, laundry, hygiene of equipment in the ward, etc.
10 Antimicrobial Use and Antimicrobial Resistance	• Principles of appropriate use of antimicrobial agents, optimal antimicrobial therapy, change and discontinuation of antimicrobial agents, etc.
11 Preventing Infections of Staff (Occupational Health)	• Basic principles of needlestick injury, blood and body fluid exposure control, and vaccination programs
Wrap-up Meeting (online live lecture)	• Evaluation and feedback of training results, request for cooperation in post-training evaluation, etc.

Source: The Survey Team

Chapter 2 Background to the Development of the Training Plan

2.1 Current Status of Healthcare-associated Infection Prevention and Control

2.1.1 Healthcare-associated Infection Prevention and Control in Tajikistan

Based on the recognition that the government of Tajikistan needs to improve the system for healthcare-associated infection (HAI) prevention and control and the basic knowledge and practice of healthcare workers, the "National Health Strategy of the Republic of Tajikistan 2010-2020" stated that HAI prevention and control measures need to be strengthened. However, it has been pointed out that HAI prevention and control has not been sufficiently implemented due to inadequate sanitation facilities, lack of water and soap, and others, and that this has affected the quality of medical care[1]. Therefore, the current "Strategy on Healthcare of Population of the Republic of Tajikistan up to 2030" (2021) states that the government will review the existing national standards for HAI prevention, improve water sanitation and medical waste management in healthcare facilities, improve infection prevention and control (IPC) programs, and take measures against antimicrobial resistance.

"The Tajikistan COVID-19 Country Preparedness and Response Plan", approved by the Minister of Health and Social Protection of the People (MOHSPP) on 19 March 2020, identifies IPC as one of the priority areas[2], among which planning and implementation of activities of the national IPC program, implementation of IPC capacity assessment, and improvement of waste management are identified as priority issues.

JICA, the World Health Organization (WHO), the United Nations Children's Fund (UNICEF), and other donors have provided support for IPC, such as the provision of personal protective equipment (PPE) and related materials and equipment as well as technical assistance. As a major recent development, the National Guidance on Prevention of Infections in Medical Institutions (2015)[3], approved by Prikaz No. 1119 dated 27 December 2014, is planned to be revised with the support of WHO, UNICEF, and others. In order to revise the national guidelines, surveys on IPC, water sanitation and medical waste in healthcare facilities are being conducted. In addition, related guidelines and standard operating procedures (SOPs) are scheduled to be developed in accordance with the revised national guidelines[4].

The Healthy Mother Healthy Baby (HMHB) Activity (October 2020 - September 2025), implemented by the United States Agency for International Development (USAID), has been taking an integrated approach to improve maternal and child health in 12 districts[5] in Khatlon Oblast. As part of the activity, in order to

[1] World Health Organization. Regional Office for Europe & European Observatory on Health Systems and Policies. (2000). Health Care Systems in Transition: Tajikistan.
[2] Priority areas are: 1) Country-level coordination, 2) Risk communications and community engagement, 3) Surveillance, 4) Points of entry, 5) Case investigation and rapid response, 6) National laboratory system, 7) Infection prevention and control, 8) Case management, 9) Multi-sectoral action to mitigate social and economic consequences, and 10) Logistics and supply management.
[3] The National Guidance describes the basics of the IPC program, including standard precautions, cleaning, disinfection, sterilization, and waste management.
[4] Interview with UNICEF on April 21, 2021.
[5] Balkhi, Dusti, Jaihun, Jomi, Khuroson, Kushoniyon, Levakant, Nosiri Khisrav, Qubodiyon, Shahritus, Vakhsh and Yovon. Kushoniyon Central District Hospital and Levakant Central City Hospital are included in the training.

improve the quality of services, HMHB has been providing technical support to quality improvement committees in the facilities and supporting the development and implementation of activity plans. The aim is to receive accreditation from the National Accreditation Center of Tajikistan eventually.

As strengthening IPC is a prerequisite for accreditation, HMHB has been providing support to target facilities on IPC and water, sanitation, and hygiene. Regarding training on IPC, the training materials are downloaded onto personal computers (PCs), and the training attendance is recorded on paper by the person in charge of the facility[6].

Regarding the implementation of distance training in the health sector, it was confirmed that online meetings and training (live webinars) are being conducted in the wake of COVID-19. The MOHSPP has also been holding daily Zoom-based meetings with district hospitals. However, there was no confirmation of the implementation of training using e-learning. On the other hand, the MOHSPP has set the goal of strengthening health information management and digital health in "the Strategy on Healthcare of Population of the Republic of Tajikistan up to 2030". Although there is no direct mention of IT-based education and training or distance training, the strategy recognizes the lack of IT infrastructure and management capacity as a challenge and will strengthen IT infrastructure.

2.1.2 Healthcare-associated Infection Prevention and Control in Target Hospitals in Khatlon Oblast

A survey on the current status of HAI prevention and control in the six hospitals was conducted for the development of the training plan. The survey was conducted based on the WHO's Infection Prevention and Control (IPC) Assessment Framework (IPCAF)[7] and Infection Control Team (ICT) round checklist, interviews with relevant personnel, questionnaires, and direct observation of IPC-related equipment and facility in the hospitals.

(1) Implementation Structure of HAI Prevention and Control

In order to understand the implementation structure of HAI prevention and control in the six target hospitals, organizations, committees and teams related to IPC were surveyed. Each hospital has internal regulations (*Farmoish)*, which describes the roles and membership of organizations or committees related to IPC, and organizations or committees based on the *Farmoish* have been established. No distinction was made between Infection Control Committees (ICCs) and Infection Control Teams (ICTs). The status of organizations or committees related to IPC in the six target hospitals is shown in Table 2-1.

[6] Interview with Abt Associates, contract implementer of USAID's HMHB, April 28, 2021.
[7] World Health Organization. (2018). Infection prevention and control assessment framework at the facility level.

Table 2-1 Status of IPC-related Organizations in the Six Hospitals

Hospital	Hospital Regulation	Members	Main Roles
Nurek Central City Hospital	No. 44	9 members Deputy director, doctors in infectious disease department, surgical department, chief nurse, head nurse, pharmacist, etc.	The committee was established in 2018. Due to an outbreak of nosocomial infections at that time, hospital staff advised the director and established the committee in accordance with Prikaz No. 1119. The committee conducts rounds in each ward once a week to check the status of hand hygiene, wearing of masks and gloves, inventory and expiration dates of drugs, and waste management.
Baljuvon Central District Hospital	No. 05	16 members Doctors and head nurses of obstetrics and gynecology, urology, pediatrics, infectious disease, otorhinolaryngology, and cardiology, laboratory technicians, sterilization staff, administrative staff such as electrician and chief accountant, etc.	The committee includes the person in charge of waste management in accordance with Prikaz No. 1119. Hospital Regulation No. 05 also includes a list of organizations related to quality improvement of medical care (8 members) and safety management (7 members).
Khovaling Central District Hospital	No. 5.1	17 members Deputy director (surgeon), doctors and head nurses of infectious disease, pediatrics, internal medicine, surgery and obstetrics, epidemiologist, laboratory technician, head of management of administrative department, accountant, electrician and fire prevention officer, receptionist, etc.	The committee was established in 2018 and is mainly responsible for the prevention of HAI. The committee carries out the activities indicated in Prikaz No. 1119. The purpose is to reduce HAI and improve the quality of medical services.
Muminobad Central District Hospital	No.21	8 members Deputy director (surgeon), doctors in infectious disease, surgery, obstetrics and gynecology, pediatrics, internal medicine, dermatology, emergency department	The committee was established about a year ago with the support of the GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit). The committee aims to improve the quality of medical care and infection control and conduct activities according to Prikaz No. 1119. The committee conducts rounds in each ward once a month.
Kushoniyon Central District Hospital	No.07	11 people Doctors in surgery, obstetrics and gynecology, pediatrics, infectious diseases, intensive care unit (ICU), epidemiologists, etc.	An organization of hospital executives that aims to improve the quality of IPC, including diagnosis and treatment. The organization collaborates with other hospital organizations to implement measures. It is obliged to report to the Hospital Director once every three months.
	No.12	12 members Nurses (surgery, maternal and child Unit, pediatrics, infectious disease, ICU, emergency, physiotherapy, clinical laboratory, etc.)	A cross-organizational IPC organization consisting of ward managers and others. The organization conducts staff training and ensures that each staff member is familiar with IPC rules and regulations. It is required to report to the Hospital Director once every three months. It is a rule that rounds are held once a week, but in reality, only about three or four of the members are able to participate. Infection control in each ward is the responsibility of the ward manager and chief nurse and this is carried out daily.

Hospital	Hospital Regulation	Members	Main Roles
Levakant Central City Hospital	No.05	8 members Deputy director (Dentistry), infectious disease, surgery, obstetrics and gynecology, internal medicine, pediatrics, ICU doctor (Director) and doctor of the No. 1 Numeral Hospital	A committee aims to improve the quality of diagnosis and treatment of HAI and was organized by a USAID project. The committee is responsible for IPC in Central City Hospital and No.1 Numeral Hospital. Each member checks daily on HAI monitoring, management, waste management, antimicrobial use, etc., and all members make rounds once every three months. The committee discusses at meetings and reports to the director.
	No.06	13 members Nurses (infectious disease, surgery, obstetrics, gynecology, internal medicine, pediatrics, emergency department, ICU, clinical laboratory, physical therapy room, radiology laboratory and maternity department of the No. 1 Numeral Hospital, etc.)	Cross-divisional and departmental organization for waste management.
	No.13	6 members Deputy director (dentistry), infectious disease, surgery, obstetrics & gynecology, ICU doctor (director) and doctor of the No. 1 Numeral Hospital	The committee specializing in infection control in the obstetrics department (committee based on hospital regulation No. 05, excluding two doctors from internal medicine and pediatrics)

Source: The Survey Team

(2) Survey by Infection Prevention and Control (IPC) Assessment Framework (IPCAF)

In order to understand the current status of IPC in each hospital, a survey was conducted using the IPCAF, which consists of eight sections and a total of 81 indicators (questions) based on the eight core components of IPC recommended by WHO (see Table 2-2).

Table 2-2 Overview of Infection Prevention and Control Assessment Framework (IPCAF)

Core Component	Example of Indicator (Question)
1. Infection Prevention and Control (IPC) Program	• Do you have an IPC committee actively supporting the IPC team?
2. IPC Guidelines	• Do you regularly monitor the implementation of at least some of the IPC guidelines in your facility?
3. IPC Education and Training	• How frequently do health care workers receive training regarding IPC in your facility?
4. Healthcare-associated Infection (HAI) Surveillance	• In your facility, is surveillance conducted for surgical site infections?
5. Multimodal Strategies for Implementation of IPC Interventions	• Do you use multimodal strategies to implement IPC interventions that incorporate at least three of the following components: (i) system change, (ii) education and training of health care workers and key players, (iii) monitoring infrastructures, practices, processes, outcomes and providing data feedback; (iv) reminders in the workplace/communications; and (v) culture change within the establishment or the strengthening of a safety climate.
6. Monitoring/Audit of IPC Practices and Feedback	• Do you have trained personnel responsible for monitoring/audit of IPC practices and feedback? • Do you monitor consumption/usage of antimicrobial agents in your facility?
7. Workload, Staffing and Bed Occupancy	• Is adequate spacing of > 1 meter between patient beds ensured in your facility?
8. Built Environment, Materials and Equipment for IPC	• Are water services available at all times and of sufficient quantity for all uses?

Source: WHO (2018)

A summary of the results of the survey conducted based on the IPCAF for the six target hospitals is shown in Table 2-3.

Table 2-3 Summary of findings from the Infection Prevention and Control Assessment Framework (IPCAF)

Strengths	Gaps
1. Infection Prevention and Control (IPC) Program	
• National Guidelines (e.g., Prikaz No. 1119) exists. • Each hospital has an organization(s) related to IPC based on the hospital regulations.	• All six hospitals do not have an IPC program. Infection control is not being implemented systematically as an IPC program in the entire hospital. No budget has been allocated for the activity. • Members of the IPC-related organizations are performing IPC activities in addition to their own work, and this is seen as an extra burden. • The duties of IPC-related organizations are not clear, and each committee member does not understand his or her role. There is no feedback system. • All six hospitals do not have a microbiology laboratory. The laboratories of the Sanitary Epidemiological Surveillance Services (SES)[8] outside the hospitals perform the tests.
2. IPC Guidelines	
• National Guidelines (e.g., Prikaz No. 1119) exists.	• The hospitals follow the national guidelines, but there are no hospital-specific guidelines (nor have they been adapted) to meet the needs and resources of the hospital. • Some guidelines are not regularly monitored of their implementation status.
3. IPC Education and Training	
• There are hospital staff who can serve as trainers (each hospital responded that there are multiple doctors and nurse managers in infectious diseases, surgery, obstetrics, etc. can serve as trainers). • IPC training modules (hand hygiene, waste management, etc.) exist as part of other training modules.	• There are no training courses specific to IPC (they exist as part of other training). • IPC training is inadequate in both quantity and quality for IPC-related organization members and other hospital staff. • Evaluation of training effectiveness is not conducted on a regular basis (with the exception of Levakant and Kushoniyon).
4. HAI Surveillance	
• Infectious disease surveillance is in accordance with SES regulations. • An infectious disease surveillance system exists and is functioning (led by the SES).	• The hospitals do not have a dedicated surveillance staff and do not conduct their own surveillance. • There is no registration system (data) for HAI. • No feedback on surveillance information.
5. Multimodal Strategies for Implementation of IPC Interventions	
• (None in particular.)	• Multimodal strategies are not used and are not understood well in the six hospitals.
6. Monitoring/Audit of IPC Practices and Feedback	
• A system for monitoring some processes (activities such as hand washing, sterilization, and waste disposal) has been established and is being monitored in the facilities.	• No feedback system (monitoring results are not shared among facilities). • Monitoring of transmission-based precautions and isolation to prevent the spread of multidrug resistant organisms is not implemented (only Khovaling was reported as being implemented, although not regularly). • The system for auditing IPC activities is unclear.

[8] An organization that conducts epidemiological surveys and interventions for infectious diseases. Its functions are similar to those of Japan's public health institutes. Under the MOHSPP, there are three layers of SES: National (Republic) SES, Oblast SES, and Rayon SES.

Strengths	Gaps
7. Workload, Staffing, and Bed Occupancy	
• Bed occupancy is kept to one patient per bed in all hospitals • No inpatient admissions will be made if the appropriate bed occupancy rate is exceeded.	• Overwork of healthcare workers (the ratio of medical personnel to patients is not kept at an appropriate level). • Only some wards of Kushoniyon Central District Hospital maintain sufficient space (more than 1 m) between patient beds.
8. IPC Infrastructure, Equipment and Facilities	
• Hospital staff members have knowledge and experience in cleaning and disinfection. • Hand hygiene items (alcohol sanitizer, soap, clean disposable towels, etc.) are available (except for Muminobad). • Cleaning supplies (mops, buckets, etc.) are available. • There is a container to collect medical waste according to the requirements of sanitary regulations.	• There are many challenges in terms of available water, safe drinking water and sanitation facilities, and each hospital does not have water and sanitation facilities available in all wards at all times. • Hospitals other than Nurek and Kushoniyon do not have single rooms to isolate patients with tuberculosis, cholera, or other infectious diseases. • There are some issues with the equipment, such as the washing machine in Baljuvon and the autoclave in Levakant, that need to be repaired. • There are many challenges in medical waste management and sewage treatment. These include the use of incinerators for infectious medical waste that do not meet hygiene and environmental requirements and inappropriate wastewater treatment systems (e.g., wastewater is discharged into the municipal sewage system without sterilization or other treatment).

Source: The Survey Team

All six hospitals are in a situation where they need to strengthen their efforts to develop and implement IPC in general. In particular, since all six hospitals have not implemented IPC as a program, it is challenging to organize infection control experts and staff in charge within the hospitals, conduct hospital surveillance, and establish a rationalized and systematized system that relates the functions of standards, manuals, and regulations for infection control and various measures to each other.

(3) Survey by ICT Round Checklist

In order to assess the status of IPC practices, one ward (surgical ward or obstetric ward) in each hospital was surveyed using the ICT round checklist. The ICT round checklist is used for surveying and monitoring the status of infection control in the hospital to ensure that the actual behavior of healthcare workers and the situation at the site are appropriate. The checklist includes items related to hand hygiene (handwashing), environmental hygiene and cleaning, and management of equipment and materials (A total of 34 items were evaluated on three levels: pass, partially failed, and fail). The results of the survey revealed the following:

- No ward meets all the requirements of the checklist.
- Water supply areas are not kept clean (three hospital wards failed).
- Problems in implementation of handwashing after treatment, disinfection of high-frequency contact surfaces (e.g., doorknobs), proper disposal of infectious diapers (most wards did not pass the criteria).

The survey results confirmed that despite the existence of Standard Operating Procedures (SOPs) for hand hygiene, wearing PPE, SOP compliance is partial. This is because healthcare workers are aware of the existence of SOPs but do not strictly adhere to them. In addition, each hospital needs to develop its own SOPs and standards for IPC based on the national guidelines and in line with the situation on the ground.

Table 2-4 shows the results of the ICT round checklist for each hospital for the following subcategories: hand hygiene (5 items), infection control (3 items), ward environment (3 items), injection drugs and needles (8 items), equipment and materials management (5 items), and disinfection and sterilization (10 items). In order for IPC to be practiced properly, the facilities and equipment need to be in place, and the appropriate implementation by staff, such as hand hygiene, disinfection, and cleaning, is necessary. Therefore, a distinction was made between facilities and equipment and staff implementation issues.

Table 2-4 Summary of the Results of the ICT Round Checklist in the Six Hospitals

Hospital	Fail		Partially Failed	
	Facilities and Equipment Issues	Staff Implementation Issues	Facilities and Equipment Issues	Staff Implementation Issues
Nurek Central City Hospital	Not applicable	Not applicable	Not applicable	Infection control (1): Change of white coats Ward environment (2): Cleaning of water supply areas; disinfection of high-frequency contact surfaces Disinfection and sterilization (3): Proper soaking in antiseptic solution during disinfection; proper disposal of infectious diapers; disposal of body fluid and blood contaminants
Baljuvon Central District Hospital	Injection (2): Preparation area of injection; separation from handwashing area Disinfection and sterilization (1): Placement of PPE	Infection control (1): Isolation of patients Injection (1): Disinfection of preparation table for injection or infusion	Hand hygiene (3): Availability and placement of soaps. Injection (1): Preparation area of injection	Hand hygiene (2): Proper handwashing; hand hygiene before and after procedures Infection control (2): Use of masks when dealing with patients with droplet infection; change of white coats Ward environment (2): Cleaning of water supply areas; disinfection of high-frequency contact surfaces Disinfection and sterilization (1): Proper disposal of infectious diapers
Khovaling Central District Hospital	Not applicable	Ward environment (1): Cleaning of water supply areas	Injection (2): Preparation area of injection; zoning of clean areas	Hand hygiene (1): Hand hygiene before and after procedures Disinfection and sterilization (2): Period of use of disinfectant, proper disposal of infectious diapers
Muminobad Central District Hospital	Injection (2): Preparation room of injection, IV drug preparation and disposal location	Ward environment (1): Cleaning of water supply areas	Injection (1): Separation from hand washing area Equipment and materials management (1): Linen storage room	Hand hygiene (1): Hand hygiene before and after procedures Ward environment (1): Disinfection of high-frequency contact surfaces Injection (1): Disinfection of preparation table for injection or infusion

Hospital	Fail		Partially Failed	
	Facilities and Equipment Issues	Staff Implementation Issues	Facilities and Equipment Issues	Staff Implementation Issues
				Equipment and materials management (1): Segregation of medical waste Disinfection and sterilization (1): Proper disposal of infectious diapers
Kushoniyon Central District Hospital	Not applicable	Not applicable	Not applicable	Hand hygiene (1): Hand hygiene before and after procedures Ward environment (1): Disinfection of high-frequency contact surfaces Disinfection and sterilization (4): Management manual, period of use of disinfectant proper disposal of infectious diapers; disposal of body fluid and blood contaminants
Levakant Central City Hospital	Not applicable	Ward environment (2): Cleaning of water supply areas; disinfection of high-frequency contact surfaces	Equipment and materials management (1): Linen storage room	Hand hygiene (2): Proper handwashing; hand hygiene before and after procedures Infection control (1): Change of white coats Disinfection and sterilization (1): Proper disposal of infectious diapers

Note: Numbers in parentheses ( ) indicate the number of applicable items.
Source: The Survey Team

The following is an overview of the status of each hospital.

In Nurek Central City Hospital, there were no items that failed, and some of the items that partially failed were due to the fact that the frequency of implementation by the staff did not meet the standard, and no issues in terms of facilities and equipment were found.

Baljuvon Central District Hospital had the highest number of failures and partial failures among the six hospitals. Some of the failures were related to equipment, such as the location of the preparation table for injection or infusion, separation from hand washing areas, and placement of PPE in sterilization and disinfection areas. Others were related to staff practices, such as patient isolation and disinfection of preparation table for injection or infusion. While many of the partial failures were related to staff practices such as proper handwashing, hand hygiene before and after procedures, use of masks when dealing with patients with droplet infection, changing of white coats, and cleaning of the water supply area. The hospital has received support in the past few years to renovate its building and improve its facilities, but staff shortage is still an issue.

The items that failed at Khovaling Central District Hospital were staff implementation issues such as inadequate cleaning of the water supply area, but this was due to the facility and equipment issues such as the lack of a separate laundry room and hand washing area. Some of the items that failed also showed issues in the frequency of implementation by the staff, such as hand hygiene before and after procedures and the duration of disinfectant use.

At Muminobad Central District Hospital, the following facility and equipment issues were identified as failed items: lack of a separate laundry room, lack of a place to prepare injectable drugs, lack of distinction between the area where IV drugs are prepared and the area where IV drugs are disposed of after use, and lack of a linen storage room. In addition, insufficient staff implementation of hand hygiene before and after procedures, disinfection of high-frequency contact surfaces, and segregation of medical wastes were also recognized. Many of the partially failed items were due to inadequate implementation by staff.

At Kushoniyon Central District Hospital, there were no failed items, but some partially failed items were found in the items of sterilization and disinfection. In addition, there was no management manual for sterilization and disinfection. Although the respondents indicated that they were following Prikaz No. 1119, there were some implementation issues such as the long period of time for using disinfectant solutions and not wearing rubber gloves when handling body fluid and blood-contaminated items.

The items that failed at Levakant Central City Hospital were cleaning of the water supply area, and disinfection of high-frequency contact surfaces in the ward environment. The items that partially failed were mostly staff implementation, such as proper handwashing methods, hand hygiene before and after procedures, and changing of white coats.

As described above, although the situation at each hospital was different, challenges were found in the IPC implementation and practice of staff at all hospitals. In addition, water supply is essential for hand hygiene, and it is necessary to consider the differences in the status of water supply facilities in each hospital as a background to the implementation of hand hygiene.

(4) Training Needs

A questionnaire survey on training needs for HAI prevention and control was conducted in two hospitals, i.e., Baljuvon Central District Hospital (rural area) and Nurek Central City Hospital (urban area).

As a result, as shown in Table 2-5, training needs were identified for all the lecture topics. In addition, although the training needs were diverse, “Outbreak prevention and management” was cited as a lecture with high needs in both hospitals. In addition, it can be inferred that the status of IPC-related training varies from hospital to hospital. For example, in Nurek Central City Hospital, the number of respondents who attended the IPC-related training was low at 24%, and some members of the IPC-related committee never attended the training.

Table 2-5 Summary of Training Needs Survey Results

	Baljuvon Central District Hospital	Nurek Central City Hospital
Number of respondents	16 (including 11 members of the IPC-related committee)	25 (including 8 members of the IPC-related committee)
Age (Average)	32 years old	42 years old
Years of experience as a healthcare professional (Average)	5.9 years	18.4 years
Number of years on IPC-related committee (Average)	4.7 years	2.2 years
Experience in attending IPC-related training	75% of respondents had attended training	24% of respondents had attended training
Training providers	MOHSPP, Oblast Health Department, GIZ, JICA, etc.	MOHSPP, Oblast Health Department, in-hospital training, Global Fund, JICA training in Japan, etc.
Training needs per lecture theme (Out of 5 points)	Overall average 4.42*	Overall average 4.03*
Lectures on high needs (Main themes)	Antimicrobial use and antimicrobial resistance	Outbreak prevention and management
Lectures required as a member of the IPC-related committee (Main themes)	Definition and types of HAI Outbreak prevention and management	New technology (details unknown)
Lectures required for other than IPC-related committee members to carry out their duties (Main themes)	Built environment in health facilities (environmental cleaning and disinfection, etc.) Definition and types of HAI	Outbreak prevention and management

Note*: Average value after excluding respondents who answered 5 for all.
Source: The Survey Team

2.2 Current Status of Infrastructure and Communication Environment Required for Distance Training

2.2.1 Ownership and Use of IT Equipment

In order to determine the ownership and use of IT equipment (PC, smartphone, tablet) necessary for conducting distance training, interviews were conducted, with a total of 43 hospital staff members who were eligible to participate in the training at four hospitals (Nurek Central City Hospital, Baljuvon Central District Hospital, Levakant Central City Hospital, and Kushoniyon Central District Hospital).

(1) Ownership of IT Equipment

As a result of the interviews, the PC ownership rate was 41.9%, the smartphone ownership rate was 90.7%, while the tablet ownership rate was 0%. The PC ownership rate was low, and the hospital-owned PC was almost non-existent (excluding PCs provided by donors for specific purposes). Hospital staff members are working on their own PCs.

Due to the high rate of smartphone ownership, it was considered feasible to conduct distance training using individually owned smartphones. However, the main use of smartphones in Tajikistan is for social networking services (SNS), which are free of charge, and people are reluctant to use internet services that incur the burden of communication charges. In fact, the interview participants were reluctant about the use of their personal smartphones for training.

(2) Use of IT Equipment

As a result of the interviews, around 90% (88.4%) of the hospital staff answered that they were able to operate a PC. Therefore, by setting up a PC environment for training in the hospital, providing an environment where staff who are skilled in operation can support those who are not familiar with it, and preparing a manual for those who are not familiar with the operation, it is thought that a learning environment can be secured for all training participants.

It was also observed that smartphone owners commonly use SNS such as IMO, Viber, and Facebook. SNS can be used to provide support and follow-up to the training participants when conducting the training. As mentioned before, none of the staff members owns a tablet, and the use of tablets is not common. Thus, tablets are not considered to be suitable for the training as there will be issues with tablet operation (text input, etc.) and management. Consequently, PC-based learning is considered to be the most appropriate for the training.

2.2.2 Infrastructure Environment

In order to prepare the learning environment in each hospital, the existing equipment and facilities were surveyed. Since all six hospitals do not have PCs and related equipment as well as an internet environment for the training, it is necessary to prepare the necessary equipment and internet environment in each hospital. In addition, the Survey Team secured a space for learning booths for the training and a classroom for live lectures (group training) at each hospital and obtained permission to use them. The location of the learning booths, the size of the classrooms, and the number of power sources were confirmed. Also, some of the desks and chairs in the classrooms were confirmed to be available for the training.

2.2.3 Implementation Status of In-hospital Training

Interviews on the implementation status of in-hospital training were conducted. The results showed that all six hospitals conduct in-hospital training regularly. Furthermore, all of them are group training. Therefore, the live lecture (group training) to be conducted in this training is expected to be smoothly implemented by following the existing training format.

2.2.4 Internet Environment

Speed tests were performed at the six target hospitals using SIMs from five mobile operators in Tajikistan. As a result, it was confirmed that MegaFone or Babilon had sufficient speed, as shown in Table 2-6. The classrooms or locations where speed could be ensured were selected as there are problems with internet speed in some locations such as Khovaling Central District Hospital.

Table 2-6 Results of Internet Connection Speed Tests at the Six Target Hospitals (April 2021)

Hospital		MegaFone	T cell	Babilon	ZET Mobile	O mobile
Nurek Central City Hospital	Download	19 Mbps	1.6 Mbps	1.2 Mbps	-	-
	Upload	7.1 Mbps	1.8 Mbps	1.3 Mbps		
Baljuvon Central District Hospital	Download	7.8 Mbps	3.3 Mbps	5.4 Mbps	-	
	Upload	2.6 Mbps *3G	3.6 Mbps	1.2 Mbps		
Khovaling Central District Hospital (Classroom)	Download	8.1 Mbps	34 Kbps	1.1 Mbps	-	-
	Upload	8.4 Mbps	4.8 Mbps	1.5 Mbps *H+		
(Booth)	Download	5.1 Mbps	34 Kbps	1.6 Mbps	-	
	Upload	13 Kbps *3G	4.8 Mbps	490 Kbps *3G		
Muminobad Central District Hospital (Classroom)	Download	1.6 Mbps	2.9 Mbps	1.3 Mbps	-	-
	Upload	6.1 Mbps	5.7 Mbps	9.9 Mbps		
(Booth)	Download	34 Kbps	2.4 Mbps	1.3 Mbps	-	-
	Upload	4.8 Mbps *3G	38 Kbps *3G	9.9 Mbps *3G		
Kushoniyon Central District Hospital	Download	6.6 Mbps	5.7 Mbps	7.5 Mbps	3.1 Mbps	-
	Upload	2.9 Mbps	2.2 Mbps	1.0 Mbps	7.8 Mbps	
Levakant Central City Hospital	Download	940 Kbps	6.4 Mbps	5.1 Mbps	6.3 Mbps	-
	Upload	3.5 Mbps	2.5 Mbps *3G	6.0 Mbps *3G	4.1 Mbps *3G	

Note* All SIMs used in the survey are 4G network (4th Generation) compatible. However, in areas where there are no 4G-capable antennas, the connection was automatically made to a 3G network (3rd Generation), and the "3G" connection is indicated in the table. The "H+" is a low-speed network of 2G (2nd Generation) or lower. Although 3G is generally slower than 4G, it is possible to secure sufficient traffic compared with 4G depending on the distance to the antenna and conditions. Therefore, in Levakant Central City Hospital, a SIM in a 3G network will be used.

Source: The Survey Team

Also, a live lecture was simulated by remotely connecting to Japan at four hospitals (Nurek Central City Hospital, Baljuvon Central District Hospital, Levakant Central City Hospital, and Kushoniyon Central District Hospital). Although Microsoft Teams has a good reputation for security and quality, the high volume of communication and the high quality required of the internet environment caused several problems in the simulation. Instead, Zoom, which supports a low-speed environment, was confirmed to be suitable for Tajikistan. In addition, it was confirmed that the telephone line connection that Zoom has is effective in case of problems with internet speed.

2.2.5 Server Environment Survey

The Survey Team conducted connection tests on data centers, which are important when viewing on-demand content. Two connection tests were conducted, one for a server environment in Japan and the other in Singapore. As a result, it was confirmed that there were no major problems in the playback of data-light content, such as video and quiz/tests using the content delivery network (CDN) environment (a distribution technology that uses servers distributed around the world). However, as shown in Table 2-7, the three types of content that require data download from the server, namely PowerPoint (PPT) slides and audio, PPT slides, and PDF, which have relatively large data, took a long time to play and caused problems with viewing.

For three types of content, in particular, the Singapore environment was able to play them in a shorter time, but it was still slower than general internet access. This is due to the difference between the domestic network and the global network in Tajikistan, and it is possible to create a more optimal viewing environment by using services in Tajikistan. Based on these results, the Survey Team examined the possibility of establishing a temporary distance learning system in Tajikistan. However, the Survey Team concluded that it would be challenging to build the system due to the uncertainty of the time required to build the system (about one to three months) and budget constraints. Therefore, for this training, the Survey Team decided to take measures to increase the download speed by converting all learning contents into video and distributing them using CDN.

Table 2-7 Time Required to Download and Play Content

Connection Location	Server Location	PPT Slides and Audio	PPT Slides	PDF	Video+[1]	Video
Kushoniyon Central District Hospital	Japan	1 minute 30 seconds	1 minute 10 seconds	35 seconds	3 seconds	1 second
	Singapore	15 seconds	23 seconds	30 seconds	2 seconds	1 second
Nurek Central City Hospital	Japan	1 minute 40 seconds	42 seconds	1 second	22 seconds	1 second
	Singapore	1 minute 10 seconds	14 seconds	2 seconds	1 second	1 second

Note [1]: Video+ is a service for creating and distributing video teaching materials.
Source: The Survey Team

2.2.6 Equipment Suppliers

In order to prepare for the procurement of equipment necessary for the training, eight equipment suppliers were surveyed. It was confirmed that general IT equipment could be procured in Tajikistan from either Russia or Dubai and that the price range is not much different from that in Japan.

Chapter 3 Training Content, Methods and Implementation Structure

Based on the aforementioned current status of healthcare-associated infection (HAI) prevention and control efforts and the infrastructure and communication environment necessary for conducting distance training, the training plan was developed, and the training was conducted as described below.

3.1 Training Participants

The target health facilities for the training were the target hospitals of the Maternal and Child Health Project, i.e., the six central district and city hospitals at the secondary level. An overview of the six target hospitals is shown in Table 3-1.

Table 3-1 Overview of Target Health Facilities (Six Hospitals) (2020)

Hospital	Target Population*	Number of Beds*	Hospital Staff			Total
			Doctor	Nurse	Other Staff**	
Nurek Central City Hospital	58,700	221	37	160	108	305
Baljuvon Central District Hospital	29,606	120	19	32	21	72
Khovaling Central District Hospital	41,000	125	16	38	25	79
Muminobad Central District Hospital	88,236	189	33	153	125	311
Kushoniyon Central District Hospital	250,000	245	26	129	77	232
Levakant Central City Hospital	41,000	260	25	107	111	243
		Total	156	619	467	1,242

Note: * Target population and number of beds are based on data in 2016. **Other staff includes cleaning staff, drivers, etc.
Source: Project for Improving Maternal and Child Health Care System in Khatlon Oblast Phase 2

The training outline was explained to the hospital directors, and their consent and willingness to cooperate in the implementation of the training were confirmed. As a result, training focal points were appointed for each hospital (see Table 3-11). Furthermore, the Director of the Health Department of Khatlon Oblast participated as an observer and monitored the progress of the implementation of the training in the six target hospitals.

The training participants were 111 healthcare staff members of the six target hospitals (Table 3-2). The breakdown of participants was 54 males and 58 females, and the average age was 38.5 years old (youngest 22 years old, oldest 66 years old). By occupation, 52 were doctors and a dentist (47%), 51 nurses and midwives (46%), two radiologists, one laboratory technician, and four administrative staff.

Initially, it was assumed that the main participants would be the Infection Control Team (ICT) members. However, since the status of the establishment of IPC-related committees or teams differs from hospital to hospital, hospital directors, and other hospital staff expressed their desire to have the person in charge of each ward participate. Each hospital selected the participants. As a result, only 26 (23%) of the participants were members of IPC-related organizations.

Table 3-2 Summary of Training Participants

Hospital	Number of Participants	Number of Participants by Occupational Category	Of which, IPC-related Committee or Team Members
Nurek Central City Hospital	16	11 doctors, 2 nurses, 1 radiologist, 1 laboratory technician, 1 administrative staff	6
Baljuvon Central District Hospital	12	8 doctors, 2 nurses, 1 dentist, 1 administrative staff	5
Khovaling Central District Hospital	19	8 doctors, 8 nurses, 1 midwife, 1 radiologist, 1 administrative staff	5
Muminobad Central District Hospital	23	2 doctors, 21 nurses	1
Kushoniyon Central District Hospital	22	7 doctors, 14 nurses, 1 administrative staff	4
Levakant Central City Hospital	19	15 doctors, 4 nurses	5
Total	**111**		**26**

Source: The Survey Team

3.2 Training Period and Schedule

The duration of the distance training course was two months (eight weeks), from 13 September 2021 to 5 November 2021. Except for the online live lectures, the rest of the training was conducted through on-demand and self-paced individual learning. The training was conducted according to schedule as shown in Table 3-3.

Table 3-3 Training Schedule

Date	Training Activity
13 September 2021	Introductory orientation (online live lecture, 6 hospitals connected simultaneously)
13 September – 5 November 2021 (Distance training period)	Training (e-learning) (on-demand)
	Outbreak prevention and management (online live lecture, seminar format) ・ 27 September: Kushoniyon Central District Hospital, Levakant Central City Hospital ・ 29 September: Khovaling Central District Hospital, Muminobad Central District Hospital ・ 1st October: Nurek Central City Hospital, Baljuvon Central District Hospital
11 November 2021	Wrap-up meeting (online live lecture, 6 hospitals connected simultaneously)

Source: The Survey Team

3.3 Training Content

This training was implemented on a trial basis with the objectives of (1) improving the knowledge of HAI prevention and control in general and (2) strengthening the functions of the IPC-related organizations, especially education and training functions. The following is a description of the contents of the training.

(1) Training Content and Language

The content of the training was designed to cover the basics of HAI prevention and control. The training content and format are shown in Table 3-4. Based on the survey results, the content of the training was adjusted to suit the situation of each hospital and participant. For example, for "3. Clinical microbiology testing", since the six hospitals do not have a microbiology laboratory and the tests are conducted by an external laboratory (SES), the content of the training included the significance and basics of microbiology testing, how to handle specimens, and the role of the laboratory. For "5. Cleaning, disinfection, and sterilization" and "6. Waste management", the content was developed based on the current national guidelines

of Tajikistan[9] after checking the status of the facilities and equipment in each hospital. As for "ICT in a Japanese hospital (case study)" of "2. IPC program", a video of ward rounds and hand hygiene compliance monitoring by ICT at Aichi Children's Health and Medical Center[10] was used as training material. In addition, in the on-demand lectures, test questions were prepared and incorporated into the training materials to check the level of understanding.

The language of training was Tajik. The Tajik language, terminology, and content were supervised by a Tajik medical doctor with experience as an IPC trainer.

Table 3-4 Lecture Theme, Content, and Format

Lecture Theme	Contents	Format
Introductory Orientation	• Orientation of the training (how to use the system, how to proceed with the course, etc.), speeches by representatives of each hospital, and others.	Online live lecture (6 hospitals connected simultaneously)
1 Definition and types of HAI	• Definition of HAI, types of HAI, pathogens, routes of transmission, etc.	On-demand lecture
2 Infection Prevention and Control (IPC) Program	• Significance and content of the IPC program, HAI prevention and control practices, and duties of the hospital organizations • Infection Control Teams (ICT) in a Japanese hospital (case study)	On-demand lecture
3 Clinical microbiology testing	• Basics of clinical microbiology, the role of clinical microbiology laboratory, drug susceptibility testing	On-demand lecture
4 Outbreak prevention and management	• Basic procedures for surveillance and outbreak response • Monitoring of HAI outbreaks in hospitals and measures to prevent the spread of infection	Online live lecture (2 hospitals at one time, 3 times in total)
5 Cleaning, disinfection and sterilization	• Methods and procedures of cleaning, disinfection, and sterilization of medical devices and equipment, etc.	On-demand lecture
6 Waste management	• Classification of wastes, treatment of infectious wastes, incineration, landfill, etc.	On-demand lecture
7 Prevention of HAI	• Surgical site infection control, indwelling bladder catheter-related urinary tract infection control, ventilator-related pneumonia control, etc.	On-demand lecture
8 Standard precautions	• Hand hygiene, use of personal protective equipment (gloves, masks/goggles, etc.), preventive measures by route of transmission, etc.	On-demand lecture
9 Built environment in health facilities (environmental cleaning and disinfection, etc.)	• Cleaning, laundry, hygiene of equipment in the ward, etc.	On-demand lecture
10 Antimicrobial use and antimicrobial resistance	• Principles of appropriate use of antimicrobial agents, optimal antimicrobial therapy, change and discontinuation of antimicrobial agents, etc.	On-demand lecture
11 Preventing infections of staff (occupational health)	• Basic principles of needlestick injury, blood and body fluid exposure control, and vaccination programs	On-demand lecture
Wrap-up meeting	• Evaluation and feedback of training results, request for cooperation in post-training evaluation, etc.	Online live lecture (6 hospitals connected simultaneously)

Source: The Survey Team

[9] The National Guidance on Prevention of Infections in Medical Institutions (2015) approved by PRIKAZ No. 1119 dated 27 December 2014

[10] Affiliated hospital of the Survey Team member in charge of IPC

(2) Introductory Orientation

An introductory orientation was held on 13 September 2021, the day of the start of the training. The orientation was conducted in the form of an online live lecture by connecting the six target hospitals online. After greetings from the Tajik and Japanese sides, the Survey Team explained the overview of the training, including the purpose, content, and schedule, and how to use the learning management system (LMS) for the training. The outline of the first orientation session is as follows.

Date and time: Monday, 13 September 2021, 15:00 – 16:00 (Tajik time), 19:00 – 20:00 (Japan time)
Place: Online (via Zoom)
Participants: Six target hospitals (Total 122 participants: Nurek Central City Hospital 20, Baljuvon Central District Hospital 16, Khovaling Central District Hospital 25, Muminobad Central District Hospital 21, Kushoniyon Central District Hospital 21, Levakant Central City Hospital 19), Khatlon Oblast Health Department, JICA, and the Survey Team

Table 3-5 Introductory orientation program

Time	Content	Speaker
15:00-15:05	Greetings from the Japanese side (JICA)	JICA
15:05-15:10	Greetings from the Survey team	Survey Team
15:10-15:15	Greetings from the Tajik side (Khatlon Oblast Health Department)	Director of Khatlon Oblast Health Department
15:15-15:30	Greetings from the hospital representative (6 hospitals)	Representatives from each hospital
15:30-15:40	Training program overview	Survey Team
15:40-15:50	Explanation of the learning method (how to use the system)	Survey Team
15:50-16:00	Question and answer session	Survey Team

(3) Outbreak Prevention and Management

The lecture theme "4. Outbreak prevention and management" was conducted in a live lecture format. Outbreak prevention and management was a topic that received more attention than other topics in the training needs survey. It is also a high-priority topic due to the weakness of the surveillance system in hospitals, according to the results of the IPCAF survey.

The purpose of this live lecture was to learn the basic procedures for surveillance and outbreak response, surveillance of HAI outbreaks in hospitals, and measures to prevent the spread of infection. The Survey Team member in charge of IPC reviewed and prepared the lecture content and implementation methods together with the training facilitator, who was a Tajik doctor with experience as an IPC trainer.

This live lecture was conducted in a workshop format with the six target hospitals divided into three groups of two hospitals each. The entire program was two and a half hours long (Table 3-6). At each hospital, the participants gathered in a training room to discuss in groups, and the two hospitals were connected online for group presentations and the exchange of opinions. The training facilitator and the Survey Team member in charge of IPC served as lecturers and visited each hospital separately, and provided advice and guidance to the workshops that were conducted simultaneously online.

Table 3-6 Program of Outbreak Prevention and Management Live Lecture

Program	Time	Method and Content
Introduction of participants and lecturers	10 min.	The participants and lecturers introduced themselves, moderated by a local assistant.
What is surveillance and outbreak prevention?	20 min.	To learn the basics of outbreak monitoring and countermeasures that should be implemented in hospitals, the participants watched an online lecture using a PowerPoint presentation with narration (lecture theme 4: Outbreak prevention and management).
Create a line list and an epidemic curve	30 min.	Summaries of individual medical record data of inpatients in a surgical ward (model case) were presented, and a line list was created for each group of hospitals, and the data was used to create an epidemic curve. Line list: A list of the date of admission, the name of the hospitalized disease, the symptoms of infection, the causative organisms and their dates of appearance, and the hospital room for each patient. Epidemic curve: a graph in which the date is plotted on the horizontal axis and the number of infectious disease cases on the vertical axis. The lecturers provided guidance through local assistants for questions.
Significance of surveillance conducted in hospitals	20 min.	The lecturers presented the epidemic curve to be created in the model case and explained its meaning.
Consideration of measures to prevent the spread of infection	30 min.	Based on the information on the causative organisms and epidemic curves, each group of hospitals discussed the measures that should be implemented in the wards of the model cases.
Group presentation	30 min.	Representatives from each group reported on the measures they had created and asked questions to the lecturers and participants.
Review	10 min.	The lecturers gave their comments and summarized the training.

A summary of the results of the three live lectures is shown in Table 3-7.

Table 3-7 Results of Outbreak Prevention and Management Live Lectures

The First Live Lecture	
Date and time	Monday, 27 September 2021, 13:00 – 15:30
Hospitals and number of participants*	Kushoniyon Central District Hospital (10 participants) Levakant Central City Hospital (10 participants)
Creation of the epidemic curve	Both Kushoniyon Central District Hospital and Levakant Central City Hospital could plot the exact number of patients on the correct date.
Measures to prevent the spread of infection that should be practiced	**Kushoniyon Central District Hospital**: Isolation of patients, restriction of visitors, inspection of staff, use of disinfectants, disinfection of used equipment, use of disposable PPE and hand hygiene, use of dishes and towels for each patient, hand hygiene for staff **Levakant Central City Hospital**: Proper hand hygiene, personal hygiene of staff, training on HAI control, thorough sterilization, correct examination, use of antimicrobials and system against microorganisms, management of urinary catheters, surgical site infection control, isolation of patients in wards
The Second Live Lecture	
Date and time	Wednesday, 29 September 2021, 10:00 – 12:30
Hospitals and number of participants*.	Khovaling Central District Hospital (18 participants) Muminobad Central District Hospital (23 participants)
Creation of the epidemic curve	Khovaling Central District Hospital failed to pick up one patient out of ten patients. Muminobad Central District Hospital made a mistake in plotting the onset date of one patient.
Measures to prevent the spread of infection that should be practiced	**Khovaling Central District Hospital**: Handwashing, wear gloves, wear masks, clean medical equipment, use chlorine solution on time, dispose of waste, disinfect wards, isolate patients, follow hospital procedures, detect sources of the infection quickly, eliminate sources of infection, record accurately in medical records, follow hand hygiene before and after consultations, suggest solutions to the person in charge. **Muminobad Central District Hospital**: Isolation of rooms for MRSA patients, the practice of 5 moments of hand hygiene, use of PPE (mask, apron, gloves, goggles), identification and management of doctors who have come in contact with MRSA patients, disinfection of rooms, disinfection of equipment used by MRSA patients, monitoring of infection status in the hospital, planning of measures to be implemented, preparation of chlorine, staff self-learning, improvement of knowledge of MRSA

The Third Live Lecture	
Date and time	Friday, 1st October 2021, 13:00 – 15:30
Hospitals and number of participants*.	Nurek Central City Hospital (10 participants) Baljuvon Central District Hospital (10 participants)
Creation of the epidemic curve	Both Nurek Central City Hospital and Baljuvon Central District Hospital could plot the correct number of patients on the correct dates.
Measures to prevent the spread of infection that should be practiced	**Nurek Central City Hospital**: Regular changing of soaps and disinfectants, wearing of rubber gloves and masks, hygiene of disposable products, cleaning of medical equipment and devices, strict personal hygiene of patients, compliance with procedures, cleaning and wiping with disinfectant solutions, collection and disposal of waste according to the manual, isolation of patients in wards, use of antimicrobials and testing for susceptibility to microorganisms, infection prevention measures among the staff. **Baljuvon Central District Hospital**: Isolation of MRSA patients, restriction of visits, bacteriological testing of staff, the practice of 5 moments of hand hygiene, PPE (masks, aprons, goggles, gloves), disinfection of patient rooms, disinfection of equipment of MRSA patients, planning of measures to be implemented, monitoring of hospital infection status, checking of urinary catheters, hospital-acquired pneumonia, waste management.

Note*: The number of participants is the number of questionnaires collected. At the Nurek Central City Hospital, there were several doctors and nurses who left during the live lecture due to emergency surgery.
Source: The Survey Team

(4) Wrap-up Meeting

After the training period, a wrap-up meeting was held to provide feedback on the training results and to hear opinions on the training. The meeting was conducted in the form of a live lecture, connecting the six hospitals online. First, the Survey Team reported on the training results, and then the six hospitals made presentations on the results of the training, challenges in the implementation of the training, and future utilization of the results. Following the report by the Survey Team and the presentations by the six hospitals, the Khatlon Oblast Health Department and JICA gave their comments on the training. The outline of the wrap-up meeting is as follows.

Date and Time: Thursday, 11 November 2021, 09:00 – 10:30 (Tajik time), 13:00 – 14:30 (Japan time)
Place: Online (via Zoom)
Participants: Six target hospitals (Total 116 participants: Nurek Central City Hospital 16, Baljuvon Central District Hospital 12, Khovaling Central District Hospital 19, Muminobad Central District Hospital 23, Kushoniyon Central District Hospital 22, Levakant Central City Hospital 24), Khatlon Oblast Health Department, JICA, and the Survey Team

Table 3-8 Wrap-up Meeting Program

Time	Content	Speaker
09:00-09:20	Report on the training results	Survey Team
09:20-10:00	Report from the hospitals	Representatives from each hospital
10:00-10:10	Comments and suggestions from the Tajik side	Director of Khatlon Oblast Health Department
10:10-10:20	Comments and suggestions from JICA	JICA
10:20-10:25	Schedule of the survey	Survey Team
10:25-10:30	Presentation of certificate of appreciation and group photos	

(5) Questionnaire

In order to examine the behavioral changes of the participants before and after the training, two types of online questionnaires were conducted at the beginning and at the end of the course, asking about their personal behaviors related to (1) standard precautions and (2) environmental and hygiene management practices (the results of the questionnaire are presented in Section 4.2) In addition, a post-training questionnaire was administered to participants who had completed the training, with the aim of ascertaining their level of satisfaction with the training, as well as their opinions and impressions in the training (the results of the questionnaire are presented in Section 4.3).

3.4 Training Tools and Methods

The training was provided in an e-learning format. E-learning is a form of learning through the internet using computers, tablets, and smartphones and mainly refers to learning through the use of LMS and learning materials (content). The LMS is the underlying system for providing e-learning and is provided as web service. The LMS provides a learning environment for the training participants, and at the same time, it has functions for the training provider to register and manage the training materials and manage the training course. Table 3-9 shows the functions of LMS that participants and administrators can use.

A wide variety of learning materials exist, including PPT materials, video materials, materials that combine PPT and video, and online live lectures that deliver lectures in real-time. In this training, based on the results of the server environment survey (p.2-13), all learning contents were video-based.

Additionally, as mentioned earlier, this training used a blended learning approach, which combines on-demand individual learning with live group lectures.

Table 3-9 Functions of Learning Management System (LMS)

Participants Training participants	**Administrators** Survey Team, local assistants, focal points of hospitals, Director of Khatlon Oblast Health Department
Input learning ・Learn with textbooks, watch lectures with video materials, and attend lectures delivered live in real-time. **Output learning** ・Take a test, submit a report. **Communication** ・Ask questions, discuss, respond to surveys, make presentations. **Others** ・Develop a schedule/study plan, view messages from administrators.	**Participant registration** ・Create a participant group, register participants. **Course registration** ・Register whom to take what and when (enrollment). **Course management** ・Check and manage learning results and progress. **Follow-up** ・Send individual emails to participants who are lagging behind in learning. ・Respond to questions and inquiries. **Others** ・Send information and messages, develop a learning plan.

Source: The Survey Team

3.5 Learning Environment and Devices

In this training, three types of learning environments were envisioned: individual learning, learning in the learning booth, and group learning in the classroom or meeting room during live lectures, as shown in Table 3-10. On-demand learning was assumed to be individual learning or learning in in-hospital learning booths, while group learning was assumed to be in the classroom during live lectures.

Personal devices were used for individual learning, and the Survey Team did not provide any equipment. Alternatively, three learning booths were created in the hospitals and were equipped with the necessary equipment such as PCs, headphones and others to create a learning environment. In addition, projectors, cameras, microphones, speakers, and other necessary equipment, were installed in classrooms or meeting rooms where live lectures were held. Furthermore, each hospital was provided with a smartphone. The smartphone was used for participation via analog phone lines in case of problems with the internet connection during the live lecture and was used for communication between the training focal points and the Survey Team.

Internet access was provided by a mobile wi-fi router distributed by the Survey Team. In addition, the Survey Team paid for internet access during the training and follow-up period.

Table 3-10 Learning Environment and Necessary Equipment

Learning Environment	Location	Equipment
1 Individual learning	Hospital (workplace), home, etc.	PC, smartphone, headphones, microphone, etc.
2 Learning in the in-hospital learning booth	Hospital	PC, desk (computer desk), headphones, microphone, wi-fi router, etc.
3 Group learning in classroom or meeting room	Hospital	PC, projector, camera, microphone, speakers, smartphone (for analog line participation and communication), etc.

Source: The Survey Team

The Survey Team procured the necessary equipment for the training, set it up, and distributed it to each hospital. At the time of distribution, the Survey Team confirmed and rehearsed the communication environment for learning on the LMS and live lectures and provided guidance to the focal points of each hospital on how to use the equipment.

3.6 Training Implementation Structure

To ensure the smooth implementation of the training, the training implementation structure shown in Figure 3-1 was established. The Survey Team worked closely with the local assistants to manage the overall progress of the training and monitor it remotely through the LMS and others.

Under the direction and supervision of the Survey team, the local assistants provided necessary support and assistance to the participants while liaising and coordinating with the Survey Team and the focal points of each hospital. Specifically, the local assistants responded to inquiries about the training content (as a liaison to the Survey Team), confirmed attendance and provided support to participants during online live lectures. IT-related support includes guidance on the use of devices and tools, support for the maintenance and troubleshooting of PCs and other devices, and support for live streaming during online live lectures.

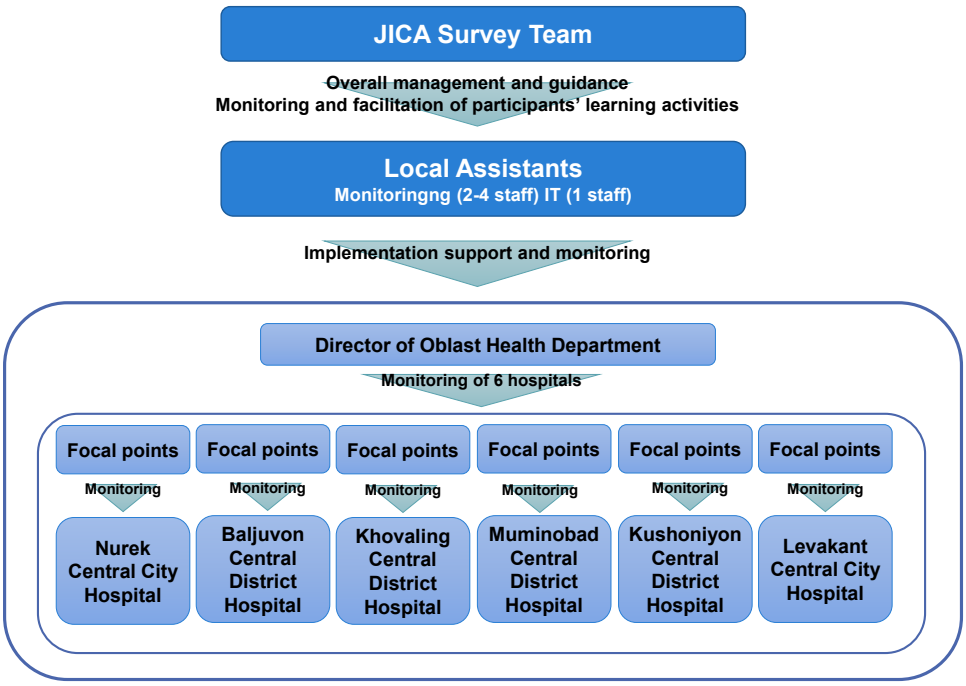
The Director of Khatlon Oblast Health Department monitored the implementation of training at the six target hospitals, provided support and facilitation to the six hospitals and advised the Survey Team.

Training focal points (representatives from hospitals collaborating with the Survey Team) were appointed in each hospital (see Table 3-11). Training focal point 1 was responsible for the overall training, and focal point 2 was mainly in charge of IT-related matters.

Table 3-11 Training Focal Points

Hospital	Training Focal Point 1	Training Focal Point 2
Nurek Central City Hospital	Deputy Director Odinaev Sulaimon	Director, Division of Infectious Diseases Gulomov Amirsho
Baljuvon Central District Hospital	Director, Division of Infectious Diseases Odinaeva Sharofat	IT Specialist Saduloev Navruz
Khovaling Central District Hospital	Deputy Director/Chair of ICC Hikmatov Savzaki	IT Specialist Kodirzoda Amirjon
Muminobad Central District Hospital	Deputy Director Manoev Safar	Director, Division of Infectious Diseases Haidarov Rajabali
Kushoniyon Central District Hospital	Infection Control Committee Chair Makhsumov Safar	IT Specialist Nuridinov Ismatullo
Levakant Central City Hospital	Deputy Director Emomov Husein Saidovich	

Source: The Survey Team



Source: The Survey Team

Figure 3-1 Training Implementation Structure

3.7 Training Monitoring and Support

A summary of the training monitoring and support provided during the training period is described below.

(1) Monitoring through the Learning Management System (LMS)

From the beginning to the end of the training, the Survey Team monitored the learning progress of the participants in real-time through the LMS, checking the date and time of each participant's learning, progress rate, learning time, test-taking status (number of times and scores), and questionnaire responses. Additionally, the progress of the course was feedbacked through the SNS (Telegram), and direct feedback was provided during hospital visits.

The LMS was also used to manage the participants. After the start of the training, there was a turnover of participants. Specifically, there were participants who quit the training due to retirement, business trips, maternity leave and other reasons, and as well as those who voluntarily withdrew from the training course. On the other hand, there were also participants who were nominated by the hospital to take the place of those who quit or who personally volunteered to take the course. Each time there was a change in participants, the Survey Team registered and deleted the participants in the LMS and managed new registrants.

(2) Monitoring and Support through SNS (Telegram)

Communication among the Survey Team, the focal points of the six hospitals, and the local assistants was conducted through Telegram. When the focal points inquired about the use of the LMS, the local assistants responded, and if necessary, the Survey Team provided additional information and other support. Screenshots and photos were shared among the three parties to confirm the situation and respond quickly when a problem arose.

In addition, the Survey Team provided regular (every Tuesday) feedback on the progress of the training (such as participation rate, progress rate, and completion rate at each hospital) to the focal points through Telegram. Feedback was also provided to the Director of Oblast Health Department via cell phone messages.

(3) Monitoring and Support by Focal Points at Each Hospital

The focal points of each hospital managed the in-hospital participant list, the LMS IDs and passwords[11]; promoted and monitored the course; managed equipment; adjusted the schedule during live lectures; and coordinated with the hospital. The focal points also assisted in the operation of the PCs and the use of LMS for the in-hospital participants.

Initially, it was assumed that the focal points would use the LMS as an administrator to monitor the progress of the participants in the hospital. However, in reality, no focal points used the LMS as administrators.

(4) Direct Support through Hospital Visits

After identifying the participants who had not started the course, were behind in their progress, or had stopped taking the course, local assistants visited the hospital to distribute the LMS manual, explain how to use the LMS, and check the status of the participants. The dates and number of visits are shown in Table 3-12. During hospital visits, the Survey Team checked the status of support through Telegram and LMS. By explaining how to use the LMS directly in person, the local assistants contributed to increasing the number of participants who started the course (first login) and the progress rate afterwards.

During live lectures, local assistants supported each hospital in the placement and setup of equipment and online connections.

[11] Since it was rare for participants to use e-mail, the LMS ID and password were given to each participant through the focal points.

In addition, because the internet environment was poor and the use of the LMS was sometimes hindered (e.g., stopping in the middle of a lecture), the participants requested printed copies of the contents for offline learning. Therefore, the Survey Team printed the contents of each lecture and distributed three copies to each hospital.

Table 3-12 Support Visits

Hospital	1st Visit	2nd Visit	3rd Visit
Nurek Central City Hospital	10/1	10/11	-
Baljuvon Central District Hospital	10/1	10/12	-
Khovaling Central District Hospital	9/29	10/13	-
Muminobad Central District Hospital	9/29	10/14	10/21
Kushoniyon Central District Hospital	9/27	10/8	10/20
Levakant Central City Hospital	9/27	10/7	-
Khatlon Oblast Health Department	10/7	-	-

Source: The Survey Team

Chapter 4 Training Results

4.1 Training Results and Learning Tendencies

The e-learning training results and learning tendencies are described below based on the data obtained from the learning management system (LMS) used for distance training.

(1) Attendance and Completion Rates

All 111 participants in the six target hospitals attended and completed the e-learning training within the training period. Both the attendance rate and completion rate achieved 100% (Table 4-1).

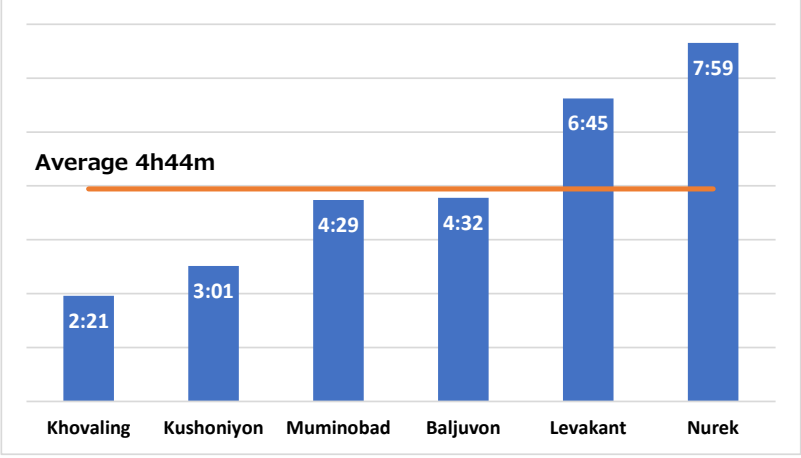
Table 4-1 Number of Participants and Completion Rates by Hospital

Hospital	Number of Participants (A)	Number of Participants who Completed Training (B)	Training Completion Rate (B/A*100)
Nurek Central City Hospital	16	16	100%
Baljuvon Central District Hospital	12	12	100%
Khovaling Central District Hospital	19	19	100%
Muminobad Central District Hospital	23	23	100%
Kushoniyon Central District Hospital	22	22	100%
Levakant Central City Hospital	19	19	100%
Total	**111**	**111**	**100%**

Source: The Survey Team

(2) Training Hours and Number of Learning Times

The total training hours was an average of 4 hours and 44 minutes per person. The average hours per person for each hospital are shown in Figure 4-1. The total number of learning times, or the number of times the participants logged into the LMS, was an average of 50.6 times per person, and the average training time per one time was 5 minutes and 26 seconds. The time required to take the e-learning training course (the minimum time required to view the content) is at 2 hours and 34 minutes, excluding the time required to answer questionnaires and tests. Therefore, the average training time per person of Khovaling Central District Hospital was less than the required time.

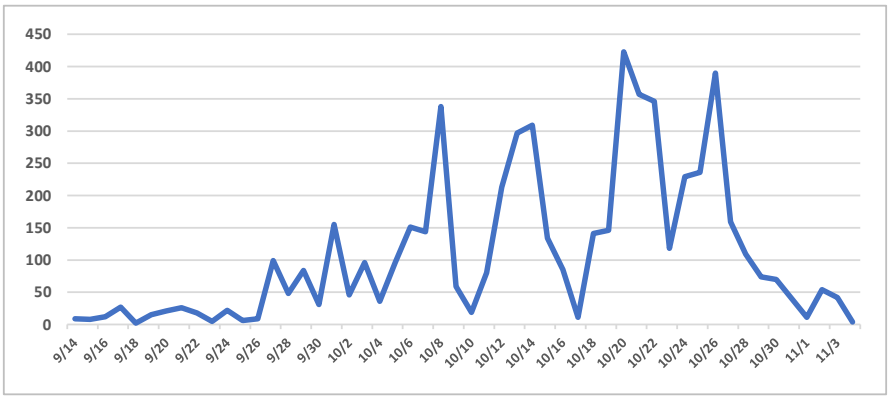


Source: The Survey Team

Figure 4-1 Average Training Hours per Person by Hospital

(3) Number of Learning Times

The number of learning times by the six hospitals as a whole from the start date to the end date (from 13 September to 5 November 2021) is shown in Figure 4-2. Although the number of learning times did not increase for about three weeks after the start date, the number of learning times increased rapidly around the days of 7, 11, 20, and 26 October. The number of learning times tended to increase when the local assistants visited the hospitals and provided direct support, and also when the Survey Team provided feedback on the status of training progress through Telegram.

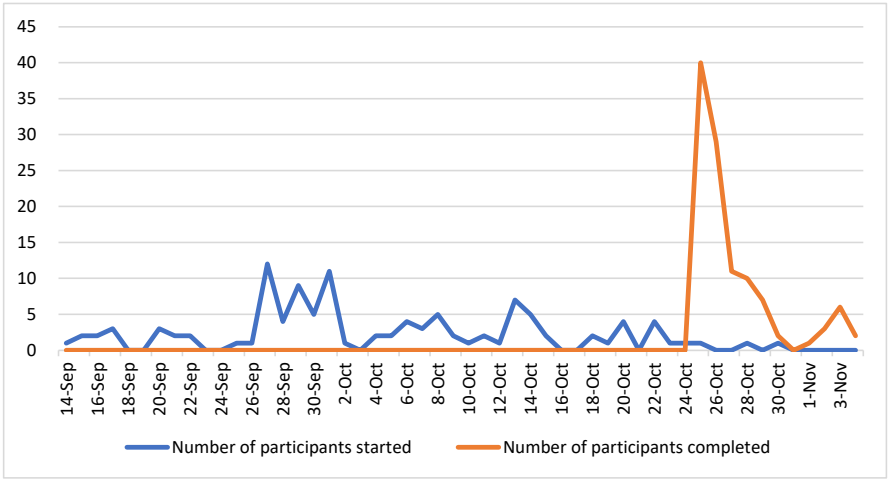


Source: The Survey Team

Figure 4-2 Trends in the Number of Learning Times (Six Hospitals)

(4) Training Start and Completion Dates

The number of participants who started and completed the e-learning training from the start date to the end date (from 13 September to 5 November 2021) is shown in Figure 4-3. It can be seen that most of the participants started their training during September, but there were also participants who started their training after the middle of October in the latter half of the training period. The increase in the number of participants who started taking the training course around from 26 September to 2 October can be attributed to the support provided by the local assistants at the hospital.



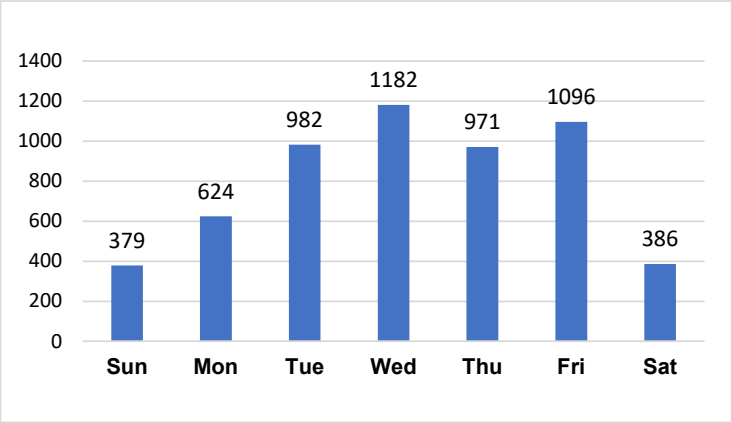
Source: The Survey Team

Figure 4-3 Trends in Training Start and Completion Dates (Six Hospitals)

On the other hand, as for the completion of the training, there were no participants who completed the training until 24 October. The increase in the number of trainees who have completed the training after 24 October can be attributed to the visits to the hospitals by the local assistants, the progress confirmation meeting with the six hospitals held on 21 October, and the follow-up Telegram messages sent by the Survey Team.

(5) Number of Learning Times by Day of Week

Figure 4-4 shows the number of learning times by day of the week. Most of the participants take training courses on weekdays from Tuesday to Friday. Although less than on weekdays, it can be seen that participants also take training courses on weekends.

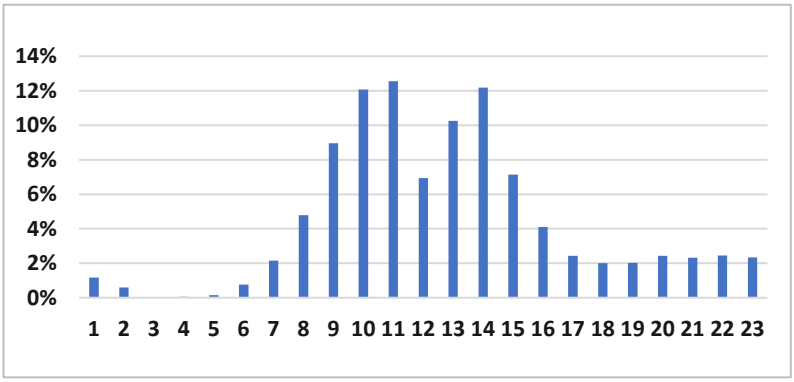


Source: The Survey Team

Figure 4-4 Number of Learning Times by Day of the Week (Six Hospitals)

(6) Timing of Learning

Figure 4-5 shows the timing of learning per time of day. It can be seen that most of the participants took the e-learning training between 9:00 and 15:00. The percentage of participants taking courses after 17:00 is only about 2% of the total. The number of participants taking courses at night is low, but some participants take courses late at night.



Source: The Survey Team

Figure 4-5 Timing of Learning per Time of Day (Six Hospitals)

(7) Devices Used for Training

Sixty-eight percent (68%) of the devices used by participants to take the e-learning training course were smartphones, which is higher than the percentage of participants who took the course on a PC (32%). In the preliminary survey, there was a reluctance to use personal smartphones for training due to the communication charges involved. However, since it was possible to use personal smartphones by connecting to the wi-fi router distributed by the Survey Team, it is thought that the use of smartphones increased.

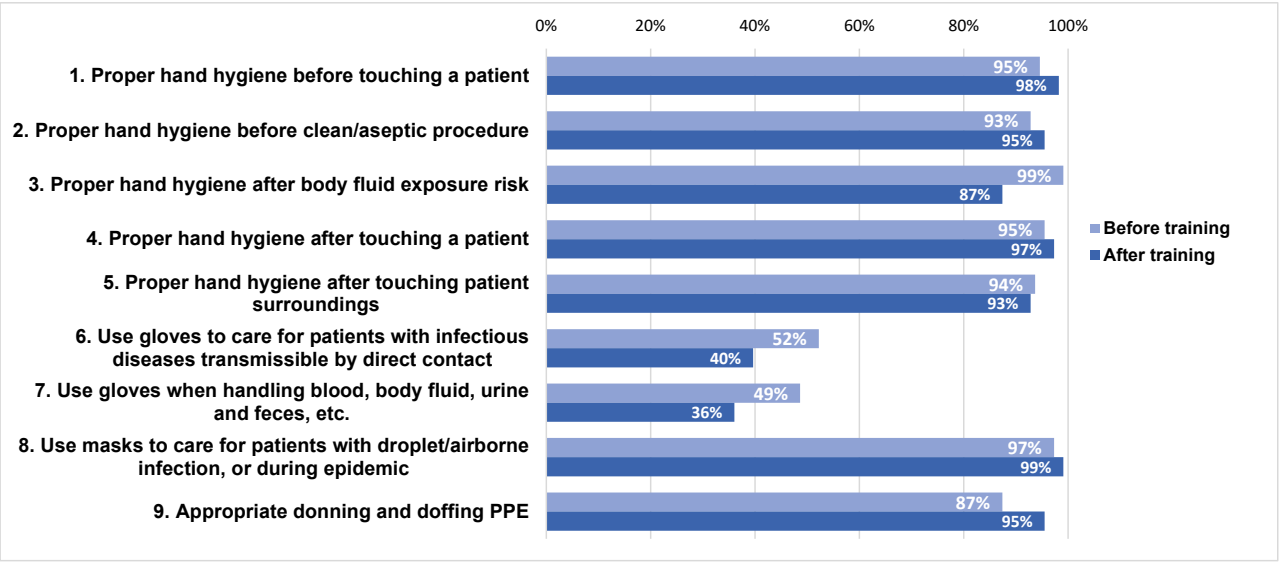
4.2 Results of Questionnaires on Behavior Change

To examine the behavioral changes of the trainees before and after the training, an online questionnaire was administered at the beginning and end of the course, asking about their personal behaviors related to (1) standard precautions and (2) environmental and hygiene management practices. Since the completion of the questionnaire was a requirement for completion of the training, all 111 participants completed the questionnaire. The following is a summary of the results of each questionnaire.

(1) Standard Precautions

In the questionnaire on standard precautions (Appendix 1), respondents were asked to select from the following options: “Every time”, “Almost every time”, “Sometimes”, and “Never” for the nine question items related to hand hygiene and others.

As a result, the percentage of participants who answered “Every time" increased for the five items but decreased for the four items (Figure 4-6).



Source: The Survey Team

Figure 4-6 Results of Questionnaire on Standard Precautions (Before and After the Training) - Percentage of Participants who Answered “Every Time”

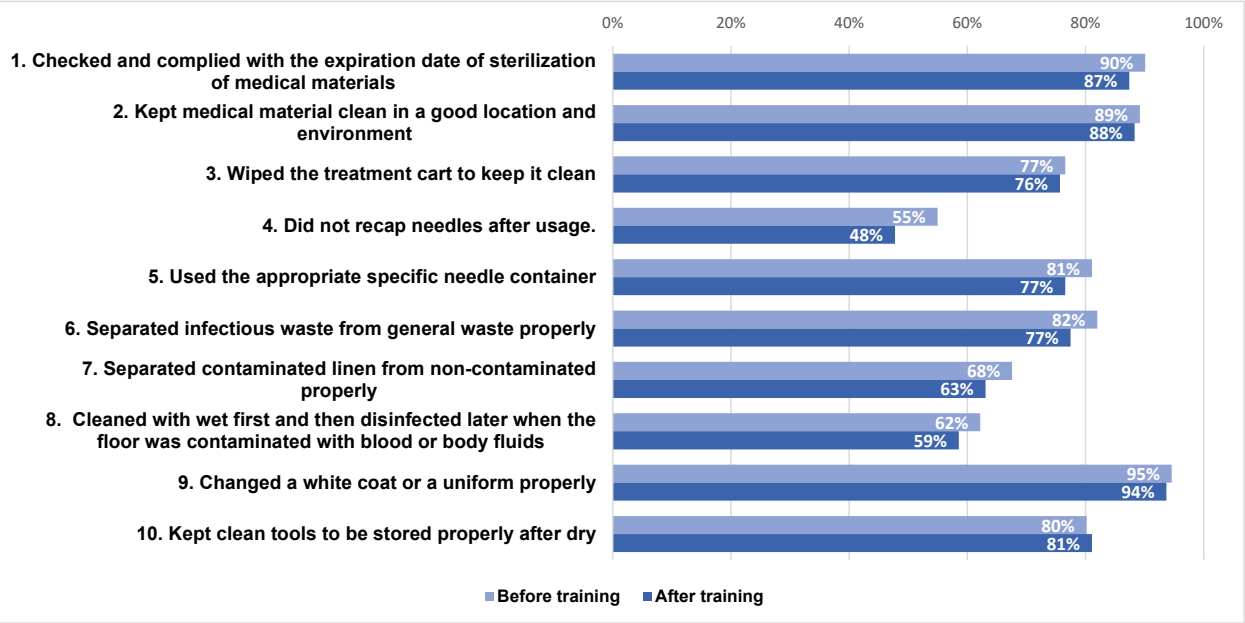
In particular, the percentage of participants who answered "Ever time" to Item 6 "Use gloves when caring for patients with infectious diseases transmissible by direct contact" decreased from 52% to 40%, and the percentage of participants who answered Item 7 "Use gloves when handling blood, body fluids, urine, and stool" decreased significantly from 49% to 36%. The compliance rate prior to the training was also low compared with the other items, at about 50%. This may be due to the fact that gloves are not available or in short supply and therefore cannot be used. On the other hand, the reason for the decrease in Item 3, "Appropriate hand hygiene when there is a possibility of exposure to body fluids", is unclear.

(2) Environmental and Hygiene Management Practices

In the questionnaire on environmental and hygiene management practices (Appendix 2), respondents were asked to choose from the five options: "Every time", "Almost every time", "Sometimes", "Never" and "Not my work" for the ten question items (see Figure 4-7).

There was no significant increase or decrease in any of the items except for Item 4 "I did not recap needles after use". On the other hand, the number of participants who answered "Not my work" increased for all items after the training (a total of 67 participants increased when totaling the ten items), even though the participants had selected answers other than "Not my work" before the course. The reason for the change before and after the course is not clear, whether they answered incorrectly as their own work even though it was not their work when they answered before the course, or whether they misunderstood the choices.

Item 4, "I did not recap needles after use", decreased from 55% to 48%. Only about half (55%) of the respondents took the correct action before the training. It is possible that they did not understand the meaning of the question correctly or did not understand that they should not recap.



Source: The Survey Team

Figure 4-7 Results of Questionnaire on Environmental and Hygiene Management Practices (Before and After the Training) - Percentage of Participants who Answered "Every Time"

4.3 Results of Post-training Questionnaire

A post-training questionnaire (Appendix 3) was administered to participants who had completed the training, with the aim of ascertaining their level of satisfaction with the training and their opinions and impressions of the training. All 111 participants answered the questionnaire. The following is a summary of the questionnaire results.

(1) Level of Satisfaction with the Training

In response to the question about the level of satisfaction with the training, 52% of the participants were "very satisfied", 49% were "satisfied", and 4% were "neither satisfied nor dissatisfied". Since 96% of the participants answered "satisfied" or "very satisfied", it can be concluded that the level of satisfaction with this training was generally high.

Table 4-2 Level of Satisfaction with the Training

Hospital	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied	Total
Baljuvon Central District Hospital	12	0	0	0	0	12
Khovaling Central District Hospital	19	0	0	0	0	19
Kushoniyon Central District Hospital	1	21	0	0	0	22
Muminobad Central District Hospital	1	19	3	0	0	23
Nurek Central City Hospital	10	5	1	0	0	16
Levakant Central City Hospital	15	4	0	0	0	19
Total (Percentage)	**58 (52%)**	**49 (44%)**	**4 (4%)**	**0 (0%)**	**0 (0%)**	**111**

Source: The Survey Team

(2) Usefulness of the Training Content

The question was asked to understand the training content was useful for the participants. In response to the question about the usefulness of the content for each training theme, about 70% (65%-77%) of participants answered "very useful," and about 30% (23%-33%) answered "useful". There was no significant difference among training themes.

Table 4-3 Opinions on the Usefulness of Training Content

	Training Theme	Very Useful	Useful	Not Useful	Did Not Take the Course
1	Definition and types of HAI	71%	28%	1%	0%
2	Infection Prevention and Control (IPC) Program	72%	28%	0%	0%
3	Clinical microbiology testing	65%	33%	1%	1%
4	Outbreak prevention and management (online live lecture)	71%	29%	0%	0%
5	Cleaning, disinfection and sterilization	70%	29%	1%	0%
6	Waste management	69%	30%	1%	0%
7	Prevention of HAI	73%	26%	1%	0%
8	Standard precautions	70%	30%	0%	0%
9	Built environment in health facilities (environmental cleaning and disinfection, etc.)	69%	31%	0%	0%
10	Antimicrobial use and antimicrobial resistance	73%	26%	0%	1%
11	Preventing infections of staff (occupational health)	77%	23%	0%	0%

Note: The number of responses is 111
Source: The Survey Team

(3) Opinion on the Training Language

The training language for this training was Tajik. In response to the question about the language of the training, 89% of the participants answered that they were satisfied with the training in Tajik, and 11% answered that they did not mind either Tajik or Russian. None of the participants answered that they wished the training had been conducted in Russian.

Table 4-4 Opinion on Training Language

Hospital	It was good that the training was in Tajik	I wish the training was conducted in Russian	Either Tajik or Russian is fine	Total
Baljuvon Central District Hospital	12	0	0	12
Khovaling Central District Hospital	18	0	1	19
Kushoniyon Central District Hospital	19	0	3	22
Muminobad Central District Hospital	22	0	1	23
Nurek Central City Hospital	13	0	3	16
Levakant Central City Hospital	15	0	4	19
Total (Percentage)	**99 (89%)**	**0 (0%)**	**12 (11%)**	**111**

Source: The Survey Team

(4) Level of Satisfaction with Training Using the Distance Training System

When asked about the level of satisfaction with the training using the distance training system (training using the internet and a computer or smartphone), 65% of the participants were “very satisfied” and 31% were “satisfied”. Two participants answered “Neither”, one answered “Not very satisfied”, and two answered “Not satisfied at all”. Therefore, 96% of the participants answered “Satisfied” or “Very satisfied”, which indicates that the level of satisfaction with the training using the distance training system is generally high.

Table 4-5 Level of Satisfaction with Training Using the Distance Training System

Hospital	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied	Total
Baljuvon Central District Hospital	12	0	0	0	0	12
Khovaling Central District Hospital	19	0	0	0	0	19
Kushoniyon Central District Hospital	20	1	1	0	0	22
Muminobad Central District Hospital	1	21	1	0	0	23
Nurek Central City Hospital	6	8	0	1	1	16
Levakant Central City Hospital	14	4	0	0	1	19
Total (Percentage)	**72 (65%)**	**34 (31%)**	**2 (2%)**	**1 (1%)**	**2 (2%)**	**111**

Source: The Survey Team

(5) Comments on the Distance Training System

When asked about their impressions of the learning management system (LMS) used in this training, almost all comments were positive, such as "interesting" and "good program". Some comments mentioned the advantage of learning regardless of time and place or that it improved their IT skills, as shown in the following comments:

"Distance learning is becoming more and more important all over the world. Distance learning can save time for instructors and doctors."

"It is a very convenient program. I can take courses online in my free time, regardless of time or location."

"This is the first time that the hospital has implemented this kind of distance learning program. I would like to request JICA to conduct other programs (related to medicine) as well."

(6) Comments on the Training in General

When asked for their impressions and opinions on this training in general, the majority of comments were favorable, such as "very good lecture" and "I learned something new". Examples of comments are listed below.

"The distance learning program on HAI was new to the hospital. Many of our staff, without access to computers or the internet, improved their knowledge through lectures and tests and learned a lot."

"One of the best things about this program is that we were able to discuss HAI control remotely with other hospitals."

"We have been reinforcing prevention of HAI since day one (of the training) and will continue to do so."

"I will make sure to wash my hands before starting to work."

"I am very glad it was done in Tajik."

"I was able to learn about the Prikaz 1119[12]."

"I liked the Japanese pediatrics (video) the best. It was a visual observation (that was introduced in the ICT activity)."

"I hope that in the future, there will be a training on other topics."

However, there were some comments that wished for direct explanations at the hospital, as follows:

"I would like the person in charge of the training to visit the hospital to explain further."

Regarding the tests provided after each lecture, the following comment was made regarding the quality of the Tajik translation.

"The lectures were of a high level. I was able to learn about the Prikaz 1119 thoroughly. However, the text on the test was difficult to understand."

[12] This refers to the National Guidance on Prevention of Infections in Medical Institutions (2015) approved by PRIKAZ No. 1119 dated 27 December 2014

(7) Willingness to Take Distance Training (e-learning) in the Future

In response to the question about the willingness to take distance training (e-learning) courses in the future, 63% of the participants answered that they would like to take the courses, 23% answered that they would like to take the courses depending on the training theme, 13% answered that they did not know, and 1% answered that they did not want to take the courses. If the theme of the training matches the participants' interests, it is expected that a large number of participants will attend. Pediatrics, other infectious diseases, cardiac diseases, skin diseases, and diabetes were mentioned as desired topics for future distance training. Also, there was a comment such as "I would like to learn the experiences of developed countries and apply them to the hospital".

Table 4-6 Willingness to Take Distance Learning Training in the Future

Hospital	I want to take the training	I want to attend depending on the training theme	I don't know	I don't want to take the training	Total
Baljuvon Central District Hospital	12	0	0	0	12
Khovaling Central District Hospital	4	0	14	1	19
Kushoniyon Central District Hospital	22	0	0	0	22
Muminobad Central District Hospital	0	23	0	0	23
Nurek Central City Hospital	14	2	0	0	16
Levakant Central City Hospital	18	1	0	0	19
Total (Percentage)	**70 (63%)**	**26 (23%)**	**14 (13%)**	**1 (1%)**	**111**

Source: The Survey Team

Chapter 5 Survey on Training Retention

5.1 Survey Method

In order to examine the effectiveness of the distance training, such as the degree of knowledge retention after the training, and to confirm and supplement the information obtained from the post-training questionnaires, a survey on the degree of training retention was conducted.

The survey method was based on interviews and questionnaire surveys with participants, focal points, and hospital management at the six target hospitals, hospital visits, and review of relevant documents and information (e.g., ICT work plans). The survey participants are shown in Table 5-1. The main points of the survey are 1) changes in the hospital's situation regarding IPC, 2) training participants' understanding and retention of the training content, and 3) the implementation method and process of distance training. Additionally, a survey using the ICT round checklist was conducted to compare changes in IPC practices before and after the training. The hospital visits were conducted from 13 to 24 December 2021, five to seven weeks after the end of the training.

Table 5-1 Number and Breakdown of Survey Participants

Hospital	Survey Participants	Breakdown
Nurek Central City Hospital	9	1 hospital management, 7 doctors and 1 nurse
Baljuvon Central District Hospital	7	1 hospital management, 4 doctors and 2 nurses
Khovaling Central District Hospital	8	1 hospital management, 4 doctors and 3 nurses
Muminobad Central District Hospital	10	1 hospital management, 1 doctor and 8 nurses
Kushoniyon Central District Hospital	8	3 doctors and 5 nurses
Levakant Central City Hospital	10	1 hospital management, 7 doctors and 2 nurses
Total	**52**	

Source: The Survey Team

5.2 Survey Results

(1) Survey of Training Participants and Focal Points

As a result of the interviews with the training participants, they understood the advantages of distance training (e.g., to learn whenever and wherever they want during night shifts or at home, and to repeat learning), and their evaluation of the training in general was high. Many of the participants expressed a desire for more distance training to be conducted in the future. In particular, there was a high interest in distance training on other topics (e.g., COVID-19, HIV, non-communicable diseases). There was also a desire to introduce distance training into the training required for medical license renewal.

As this was the first time for the target hospitals to implement distance training, and many of the participants were not IT literate, it took time and effort to get used to the distance training using the LMS, and they needed support from local assistants. However, as the participants understood that there were many advantages, many participants expressed their desire for regular and continuous use of the distance training program, saying that they would get used to using the program (LMS) if they could use it regularly and that they could learn the content more easily if it was regular. Some also suggested that if distance training could be used on an ongoing basis, it would be possible to spread the training among the hospital staff.

On the other hand, it was pointed out that it is necessary to support offline learning by distributing and downloading training materials and that ensuring the quality of Tajik translation is an issue.

Recommendations and comments from the interviews with training participants and focal points are summarized in Table 5-2.

Table 5-2 Recommendations and Comments from Training Participants and Focal Points

Hospital	Recommendations and Comments
Nurek Central City Hospital	● **Recommendations for the regular use of distance training program** It would be nice to be able to use distance training programs on a regular basis. Regularity would make it easier to learn the content. ● **Recommendations to conduct distance training on other topics** Prefer specific infectious diseases (COVID-19, influenza, polio, etc.) I would like a theme on infectious diseases that frequently occur in the community. I would like educational videos with information on the treatment of infectious diseases to be available at all times. ● **Recommendations to provide or download materials and support for offline learning** Provide materials for those who do not have smartphones and make lectures available for download. ● **Recommendations for opportunities to learn from experiences abroad and in Japan** Provide opportunities to learn from experiences abroad. Learn from the practices and systems of Japanese hospitals. "I want my colleagues to visit Japan so they can see the real situation." (a comment from a person who set up an IPC group in an obstetrics ward as a result of the visit to Japan) ● **Comments on distance training in general** (After attending the training) everyone was talking about hand hygiene. "For introverts, this distance training program is very important and makes learning easier. Some people feel pressured in training where they are surrounded by people and cannot concentrate on learning, but online training is a great option for such introverts." ● **Comments on IPC** The hospital does not have enough funds to follow all the rules and regulations. "It is not only the knowledge that is important in IPC, but also the environment that is conducive to compliance with IPC regulations. This is very difficult to achieve in our hospital."
Baljuvon Central District Hospital	● **Comments on distance training in general** If we have access to distance training all the time, it would be helpful to use it instead of books. We would like distance training to be held more often. It was good that the nurses had the opportunity to experience the latest technology. ● **Comments on training content** There were many training contents for nurses. The program was a good combination of theory and lecture. There was some information that had to be repeated four times to understand. ● **Conducting distance training on other topics** Training on HIV/AIDS and HIV mother-to-child transmission. Training course related to COVID-19 and PCR. Training on other diseases. ● **Comments in relation to continuing education** "It may be helpful for continuing education of health care professionals if the certificate of appreciation showed the start and end dates and indicated that this training was for a month* (*two months to be correct)." "It would be good if distance training is introduced to advanced training of medical professionals (doctors must go to Dushanbe every five years to take a two-week course in their specialty and pass an exam. Once they pass, their license is renewed)."
Khovaling Central District Hospital	● **Comment on distance training in general** The distance training program should be available whenever we need it.
Muminobad Central District Hospital	● **Recommendations for the regular use of distance training program** If distance training can be used on a regular basis, it can be used to provide training to all staff. If we can use the distance training program regularly, we will get used to using it. ● **Comments on training content** There was a translation error, but not that critical. ● **Recommendations to conduct distance training on other topics** The same distance training is desired for non-communicable diseases.

Hospital	Recommendations and Comments
	● **Comments on equipment** It would be good to have computers in all departments to conduct training in our departments.
Kushoniyon Central District Hospital	● **Comments on distance training in general** It was good that the nurses had the opportunity to be exposed to the latest technology. ● **Comments on training content** Most of the information were new to the nurses, except for hand hygiene and the Prikaz 1119. The course was simple and easy to understand. We would like a course with new information in the future. There should be separate content for senior and non-senior nurses. ● **Comments on IT skills and literacy** Most of the participants had never used a computer before. So, at first, it was difficult to understand the program. It would be good if the nurses could learn how to use the computer before starting their training.
Levakant Central City Hospital	● **Comments on distance training in general** Easy to use in spare time at home or during the night shift. It can save our time. Learn repeatedly and take tests as many times as we want. The live lecture that was held with other hospitals was very impressive. In addition, we had group discussions and could deepen our understanding. "This is the first training I have attended with audio lectures, pictures and graphs, and tests. It is good for all types of memory (visual, auditory)." "At first, I was very skeptical of the program, but in the end, I saw progress, and if used daily, it could be a step towards a brighter future for medicine." ● **Recommendations to conduct distance training on other topics** Training on other diseases Training on specific diseases (e.g., COVID-19)

Source: The Survey Team

The main results of the interviews and questionnaire surveys with training participants and focal points are shown in Table 5-3. Most of the participants answered that the purpose of the training was clear and that they understood the content. However, there were some participants who could not remember the actual structure of the training (e.g., what the lecture themes were about). It is possible that some participants were so overburdened with operating the PC and using the LMS that they were unable to understand the content of the training, absorb, or retain the knowledge.

Table 5-3 Summary of the Results of the Survey of Training Participants and Focal Points

Hospital (Number of Respondents)	Nurek (9)	Baljuvon (6)	Khovaling (8)	Muminobad (9)	Kushoniyon (8)	Levakant (10)
Are the objectives of the distance training clear?	Two people did not understand the purpose. The others understood.	Everyone had a clear understanding of the objective.	One person did not understand the purpose. The others understood.	Everyone had a clear understanding of the objective.	Everyone had a clear understanding of the objective.	Everyone had a clear understanding of the objective.
Did you understand the language and content of the training?	All understood the language and could use it in their work.	All answered that they understood the language and could use it in their work.	One person did not answer. Others answered that they understood the language and could use it in their work.	All answered that they understood the language and could use it in their work.	All answered that they understood the language and could use it in their work.	All answered that they understood the language and could use it in their work.
Do you remember the structure of the training?	Seven people remembered correctly. One person made a mistake. One did not answer.	All of them remembered.	Two people remembered correctly. One person made a mistake. Five did not answer.	Three people remembered correctly. Two made a mistake. Five did not answer.	One person remembered correctly. Three made a mistake. Four did not answer.	Five people remembered correctly. Two made a mistake. Three did not answer.

Hospital (Number of Respondents)	Nurek (9)	Baljuvon (6)	Khovaling (8)	Muminobad (9)	Kushoniyon (8)	Levakant (10)
About using the LMS	All can use the LMS and understand how to use it.	Two people said it was difficult to use the LMS. All understand how to use it.	Two people said it was difficult to use the LMS. All but one understands how to use it.	Six people said it was difficult to use the LMS. All understand how to use it.	Two people said it was difficult to use the LMS. All understand how to use it.	Four people said it was difficult to use the LMS. All understand how to use it.
About the training environment	All appreciated the provision of PCs, internet access, smartphone, and the convenience of learning during the night shifts.	All appreciated the provision of PCs and the internet environment.	All appreciated the provision of PCs and the internet environment.	All appreciated the provision of PCs and the internet environment.	All appreciated the projector, screen, and training instructors.	All appreciated the provision of PCs, internet environment, smartphone, and the convenience of learning from home.
Would you recommend the training to others?	Half of the respondents said they would recommend it.	All answered that they would recommend it. "I can pass on the knowledge I have gained to others".	All responded that they would recommend it.	All responded that they would recommend it. "I would recommend it because I can train my colleagues".	All responded that they would recommend it. "In addition to the training content, you can also learn new techniques".	All responded that they would recommend it.

Source: The Survey Team

(2) Survey of Hospital Management

According to the interviews and questionnaire surveys with hospital management, such as the hospital director of all hospitals except Kushoniyon Central District Hospital, all respondents positively evaluated the distance training. The main changes in IPC practices after the training are described in Table 5-4.

With regard to the implementation of IPC, for example, there was no improvement in the issue of "no feedback system (monitoring results are not shared among facilities)" (see Table 2-3), which was identified in the preliminary survey. Regarding the feedback on IPC practices from the heads of each department and ICC/ICT, although records were kept at the Levakant Central City Hospital, there was no feedback to the field on the performance of IPC-related activities at the five hospitals. It can be inferred that there are still many issues to be addressed regarding the activities of ICC/ICT.

Table 5-4 Major Changes in Infection Prevention and Control Practices after the Training

Hospital	Major Changes in Infection Prevention and Control (IPC) Practices
Nurek Central City Hospital	No major changes. An ICC/ICT work plan has been developed.
Baljuvon Central District Hospital	Started to keep patients out of the infectious disease ward (the areas are marked and zoned)
Khovaling Central District Hospital	An ICC (17 members) was established.
Muminobad Central District Hospital	The staff became more aware of personal hygiene.
Levakant Central City Hospital	The hospital management has issued an order to strengthen IPC activities.

Source: The Survey Team

Recommendations for this training from the hospital management are as follows:

- Department heads should ensure that such distance training is conducted on a weekly basis (once a week)
- Ensure the quality of the translation of training content
- The training program should focus on the type of target audience (separate modules for doctors and nurses).
- Assign a training coordinator from hospital personnel to monitor training.
- Extend the training period to three months to increase flexibility in training schedules.
- Consider including other topics (e.g., COVID-19, HIV) as distance learning topics in the future

(3) Survey by ICT Round Checklist

In order to understand the changes in IPC practices before and after the training, a survey was conducted in each hospital ward (surgical or obstetric ward) using the ICT round checklist. The previous survey was conducted in April 2021 (see p.2-6). The checklist included items related to hand hygiene, environmental hygiene and cleaning, and management of equipment and materials (total of 34 items; rated on a three scale of passed, partially passed, or failed). In this survey, Nurek Central City Hospital showed improvement in some items and no deterioration, while other hospitals showed both deterioration and improvement. However, there was no confirmation that these changes were due to this training.

This does not mean that the effect of the training has not been realized due to the short period of time between the completion of the training and the survey, but rather due to the problems of lack of equipment and infrastructure necessary for IPC activities in each hospital. In this survey, it was confirmed that all the hospitals had issues such as lack of equipment and materials for IPC activities, no or intermittent water supply system, and old sterilization equipment.

Chapter 6 Demand for Distance Training

6.1 Demand Survey Methods

The overall framework of the demand survey on distance training is shown in Table 6-1. The demand for training was verified from three perspectives: (1) evaluation of healthcare-associated infections (HAI) prevention and control training (individual and organizational levels), (2) evaluation of e-learning (distance training), and (3) comparative advantage of this training. Based on the results of the verification, lessons learned and areas for improvement were identified and organized, and recommendations for the future were made.

The main information and data for verification were the results of the prior survey on the current status of the infrastructure and communication environment necessary for the implementation of HAI prevention and control measures and distance training (Chapter 2), the questionnaires administered during the distance training (Chapter 4), and the survey on the degree of retention of the training (Chapter 5). In addition, the comments made at the introductory orientation and wrap-up meeting, and information obtained through training monitoring were also used as materials for consideration.

Table 6-1 Overall Demand Survey for Training

	(1) Training on HAI Prevention and Control	(2) E-learning	(3) Comparative Advantages of this Training
Contents	Evaluation of training at the individual level and organizational (e.g., IPC-related committees) level	Evaluation of training materials, devices and tools, guidance, and IT skills and literacy	Verification of the usefulness of this training compared to previous in-hospital training, similar training by other organizations and donors, and training on other health issues.
Target Group	Training participants, hospitals and other related parties	Training participants, training focal points, etc.	Training participants, training focal points, hospital management, Oblast Health Department, other donors, etc.
Method	Questionnaires, tests, direct observation, and hearing opinions at meetings	Interviews, questionnaires, direct observation, hearing opinions at meetings	Interviews, questionnaires, and meetings to obtain opinions
Evaluation Results	• Preliminary survey (Chapter 2) • Results of the questionnaires on behavior change (Chapter 4) • Results of the post-training questionnaire (Chapter 4) • Survey on training retention (Chapter 5)	• Preliminary survey (Chapter 2) • Training results and Learning tendencies (Chapter 4) • Results of the post-training questionnaire (Chapter 4) • Survey on training retention (Chapter 5)	• Preliminary survey (Chapter 2) • Results of the post-training questionnaire (Chapter 4) • Survey on training retention (Chapter 5)

Demand for Training

Identifying Lessons Learned and Areas for Improvement

Source: The Survey Team

6.2 Demand for Distance Training

The demand for training on healthcare-associated infection (HAI) prevention and control were verified, including the benefits of distance training (e-learning) and whether Tajikistan's stakeholders found value and significance in Japan's distance training (e-learning) in the field of health care, especially in HAI prevention and control. The results of the verification are described below for each of the following stakeholders: healthcare workers, hospital management, the Khatlon Oblast Health Department and the Ministry of Health and Social Protection of the People (MOHSPP).

Healthcare workers

- Instead of group training, which was conducted during work hours, healthcare workers could learn repeatedly at their own pace, using their free time, regardless of time and place.
- With a minimum of IT equipment and an internet environment in place, even participants who had never or rarely used a PC were able to operate a PC or smartphone and use the LMS to complete the training by actually attending the training. As a result, their resistance to using PCs and learning on the LMS decreased and their IT skills and literacy improved. The participants acquired basic skills in taking distance training courses.
- Participants who had learned only a part of HAI prevention and control (hand hygiene, etc.) were able to learn items they had never learned before. In addition, they were able to relearn what they had learned in the past (e.g., Prikaz 1119).
- Unlike conventional training, the use of materials that include video, audio materials, pictures/graphs, and tests promote understanding and memory (visual and auditory memory) of the content, thus increasing the effectiveness of learning. This is also effective for other topics (e.g., treatment of infectious diseases).
- It was helpful to watch a video of a case study of a hospital in Japan (ICT activities).
- The online seminar (live lecture) allowed the participants to deepen their understanding by discussing with other hospitals.

Hospital management

- Distance training can save time for instructors and participants.
- Through distance training, training can be provided to all staff in the hospital and knowledge can be disseminated.
- Although training on HAI prevention and control has been conducted as a part of other topics (maternal and child health, etc.), comprehensive and systematic training has not been conducted. This training provided an opportunity for participants (mainly nurses) who had learned only a part of HAI prevention and control (hand hygiene, etc.) to receive training on the basics.
- The IT literacy of the participants (especially nurses) was improved by actually taking the training using IT equipment and the internet.
- The participants including hospital management understood the advantages of online seminars (live lectures) and gained knowledge on how to hold them (e.g., setting up equipment).

- Through this training, the participants including hospital management gained knowledge on effective and efficient ways to implement distance training (training period, frequency, assignment of in-hospital training coordinators, selection of target participants, etc.).

Oblast Health Department and MOHSPP

- Through this training, it was confirmed that it is possible to conduct distance training in Tajikistan, not only in urban areas but also in mountainous areas, as long as the conditions are met, such as the provision of equipment and internet access, and support for participants on the use of LMS.
- There is a great need for distance training, as many of the participants expected distance training not only for HAI prevention and control but also for other topics.
- There is a possibility that existing training programs (e.g., those for license renewal) could be replaced, even partially, by distance training. This will lead to cost savings in terms of travel and daily allowance for instructors and training participants, as well as time savings. For medical facilities, it will shorten the period of absence of medical personnel.
- Distance training is useful in communicating and disseminating information on important policies and guidelines. Many participants commented that they were able to learn about the Prikaz1119 (2015) in this training. There is still a need to learn more about the contents of the Prikaz1119 even after almost seven years since its formulation.
- Distance training enables training and information transmission even when group learning is difficult due to travel restrictions, such as during infectious disease outbreaks or natural disasters.
- Through this training, it was confirmed that it is possible to develop the IT infrastructure necessary for distance training and to acquire rudimentary IT skills of healthcare workers. The introduction and implementation of distance training may contribute to the development of IT infrastructure and management capacity to strengthen health information management and digital health, as stated by the MOHSPP in its Strategy on Healthcare of Population of the Republic of Tajikistan up to 2030.

Chapter 7 Lessons Learned and Areas for Improvement

As a result of the trial implementation of distance training on healthcare-associated infections (HAI) prevention and control in the Survey, lessons learned on how to implement effective distance training in Tajikistan and the Central Asian region, including points to be considered and possible measures to be taken, are as follows:

(1) Involvement and joint monitoring (sharing of progress) of the Oblast Health Department and the management of the target hospitals are important to encourage participants to take the training (increase the training attendance and completion rates).

The Director of the Oblast Health Department showed great interest and cooperation in this training. During the implementation of the training, the director, the focal points of each hospital, and the Survey Team shared the training progress and monitored the training remotely through social networking system (SNS). In addition, the deputy hospital directors and department heads were appointed as focal points in the target hospitals, and they themselves attended the training as participants. The fact that the training focal points learned how to use the learning management system (LMS) and provided support to the participants in the hospital was also a significant factor in promoting participation.

(2) An in-depth preliminary survey and preparation of the infrastructure and communication environment necessary for training are essential.

Prior to the implementation of this training program, a preliminary survey was conducted to investigate the internet environment at the six target hospitals, the status of the equipment owned, and the status of the conference room where the training would be held (capacity, location of power source, etc.). As for the internet environment, the Survey Team conducted a speed test using a SIM from a mobile line of five companies in Tajikistan, confirmed the optimal mobile line for each hospital, and then purchased the SIM. Since the internet speed varies from place to place, even within the same hospital, the Survey Team identified in advance the rooms where the speed could be secured. Based on the results of these preliminary investigations, the Survey Team selected and procured equipment. The Survey Team also simulated the setup and connection of the equipment at each hospital, assuming a live lecture. In case there was a problem with the internet connection during the live lecture, measures were taken to allow participants to use analog phone lines with their smartphones. Careful preparation based on the results of the thorough preliminary survey is necessary to conduct training in rural areas with particularly poor internet environments.

(3) Blended learning that combines on-demand individual learning and group live lectures is desirable from the perspective of learning effectiveness and increasing participant motivation.

In this training, based on the results of the server environment survey, the learning contents were based on the slide type (materials consisting only of audio and PowerPoint (PPT) slides). Therefore, interactive content could not be used, and the training tended to be more of a knowledge transfer type. In such a situation, blended learning that combines on-demand individual learning and group live lectures is particularly desirable. In fact, the participants gave high marks to the group-type live lecture on outbreak prevention and management that was conducted in this training.

(4) Training contents need to be field tested and finalized.

In this training, the training contents prepared by the Survey Team in English were translated into Tajik. The Tajik version was supervised by a Tajik doctor with expertise in infection prevention and control (IPC), who checked and revised the contents. However, due to the large volume of the contents, a great deal of time and effort was expended in checking the Tajik version. Originally, all content should have been field tested before being finalized, but due to time constraints and other factors, the Survey Team could not field test all the contents. In order to have appropriate Tajik translation and localized contents, it is necessary to have an adequate time to create the contents and complete them after the field test.

(5) IT literacy should be taken into consideration when selecting participants for the training. Or, if necessary, add prior training to acquire IT literacy required for the course.

Some of the participants did not have smartphones and had never or rarely used a PC. Therefore, many of them had difficulty even logging into the LMS on their own, and required considerable support from local assistants and training focal points of each hospital. Even after they started the course, some of the participants could not proceed with their learning without the facilitation and direct support of the Survey Team and its local assistants, and it became clear from the monitoring of the LMS that some of the participants were struggling just to operate the PC and use the LMS. Although this training had the desirable result of improving the IT literacy of the participants, the learning effect will be affected if the IT literacy is too low. Therefore, when selecting participants, it is necessary to add the requirement of having a minimum level of IT literacy to the selection criteria. Or, if the training participants do not have the minimum IT literacy, it is necessary to set up a pre-training program to acquire the necessary IT literacy before the course starts.

(6) An appropriate training coordinator should be selected from hospital personnel to monitor the training.

In this training, it was assumed that the training focal points would monitor the trainees in the hospital through the LMS. However, in reality, there were no focal points who used LMS as administrators. Many of the focal points for this training program are deputy directors or department heads, and they are very busy, so it is practically difficult for them to monitor the training. Therefore, the Survey Team provided weekly feedback on the progress to each hospital. In order to manage the training participants and promote and support their attendance in a timely and appropriate manner, it is necessary to select relevant hospital personnel who can play the role of training coordinators and acquire the necessary skills and knowledge to monitor the training.

(7) In order to reap the full benefits of distance training, it is desirable to institutionalize distance training in stages to ensure its continuous availability, rather than sporadic implementation.

This training was conducted on a trial basis, and the use of the LMS was terminated at the end of the training. However, there were many requests from the participants to institutionalize the distance training system, i.e., to keep it available on a regular and continuous basis. There were also many participants who wished for the implementation of distance training on other diverse topics (e.g., COVID-19, HIV, cardiovascular diseases).

However, the institutionalization of the program will require a wide range of responses, including system design, development, and operation, as well as considerable costs and time. The first prerequisite is the understanding and approval of the Ministry of Health and Social Protection of the People (MOHSPP) for the distance training. Then, the following steps need to be taken: 1) establishment of a supervision and support system by the MOHSPP, the Oblast Health Department, and other related organizations; 2) determination of the department in charge of distance training (within the MOHSPP, etc.), assignment of staff, etc.; 3) formulation of training plans and development of training materials; 4) establishment and operation of the distance training system (construction and maintenance of servers, assignment of staff, etc.); 5) development of the implementation structure for the facilities (preparation of the internet environment, procurement of PCs and other equipment, support at the time of introduction, training of IT personnel and training staff, efforts to improve the IT literacy of the target participants, etc.); and 6) overall operation of the distance training system and support for the facilities and participants (registration and management of participants, monitoring of overall progress through the LMS, troubleshooting, etc.).

This distance training using LMS was the first attempt in the health sector in Tajikistan, and the Survey Team led the implementation of mainly, 3), 5) and 6) above and piloted in the six hospitals. Since it is not easy to institutionalize all of the above at once, it would be more realistic to conduct a trial of introducing distance training as a part of the existing training, verify the effectiveness, and then proceed with the institutionalization in a phased manner.

Appendices

Appendix 1: Questionnaire on Standard Precautions

Appendix 2: Questionnaire on Environmental and Hygiene Management Practices

Appendix 3: Post-training Questionnaire

Appendix 4: Training Material (PPT)

Appendix 1: Questionnaire on Standard Precautions

(Note: This questionnaire was translated into Tajik for the participants)

Questionnaire

Looking back at your hospital work over the past week, choose the answer that corresponds to your actual behavior or action to the following questions.

Q1. I practiced hand hygiene properly before touching a patient

every time / almost every time/ sometimes / never

Q2. I practiced hand hygiene properly before clean/aseptic procedure

every time / almost every time/ sometimes / never

Q3. I practiced hand hygiene properly after body fluid exposure risk

every time / almost every time/ sometimes / never

Q4. I practiced hand hygiene properly after touching a patient

every time / almost every time/ sometimes / never

Q5. I practiced hand hygiene properly after touching patient surroundings

every time / almost every time/ sometimes / never

Q6. I used non-sterile gloves in caring for patients with infectious diseases transmissible by direct contact.

every time / almost every time/ sometimes / never

Q7. I used non-sterile gloves when handling blood, body fluid, urine, and feces.

every time / almost every time/ sometimes / never

Q8. I wore masks in caring for patients with droplet/airborne infection, or during epidemic by droplet / airborne transmission microbes.

every time / almost every time/ sometimes / never

Q9. I put on and removed PPE (gloves, masks, aprons and gowns, goggles or face-shields) in an appropriate way.

every time / almost every time/ sometimes / never

Appendix 2: Questionnaire on Environmental and Hygiene Management Practices

(Note: This questionnaire was translated into Tajik for the participants)

Questionnaire

Looking back at your hospital work over the past week, choose the answer that corresponds to your actual behavior or action.

Q1. I complied with the sterilization validation of medical materials by checking the expiration date.

every time / almost every time/ sometimes / never / not my work

Q2. I kept medical material clean in a good location and environment.

every time / almost every time/ sometimes / never / not my work

Q3. I wiped the treatment cart to keep it clean.

every time / almost every time/ sometimes / never / not my work

Q4. I did not recap needles after usage.

every time / almost every time/ sometimes / never / not my work

Q5. I used the appropriate specific needle container.

every time / almost every time/ sometimes / never / not my work

Q6. I separated infectious waste from general waste properly.

every time / almost every time/ sometimes / never / not my work

Q7. I separated contaminated linen from non-contaminated properly.

every time / almost every time/ sometimes / never / not my work

Q8. When the floor is contaminated with blood or body fluids, I cleaned the wet first, and then disinfected later.

every time / almost every time/ sometimes / never / not my work

Q9. I changed my white coat or uniform properly in accordance with the standard protocol.

every time / almost every time/ sometimes / never / not my work

Q10. I kept clean tools to be stored properly after dry.

every time / almost every time/ sometimes / never / not my work

Appendix 3: Post-training Questionnaire

(Note: This questionnaire was translated into Tajik for the participants)

1. Were you satisfied with the distance training on HAI prevention and control?

   1. Not at all satisfied, 2. Not very satisfied, 3. Neither satisfied nor dissatisfied, 4. Satisfied, 5. Very satisfied

2. Did you find the following lectures useful?

   1. Not useful, 2. Useful, 3. Very useful, 4. I did not take the course

Lecture	
1	Definition and types of HAI
2	Infection Prevention and Control (IPC) Program
3	Clinical microbiology testing
4	Outbreak prevention and management (online live lecture)
5	Cleaning, disinfection and sterilization
6	Waste management
7	Prevention of HAI
8	Standard precautions
9	Built environment in health facilities (environmental cleaning and disinfection, etc.)
10	Antimicrobial use and antimicrobial resistance
11	Preventing infections of staff (occupational health)

3. This training was conducted in Tajik. Please tell us your opinion about the language.

   1. It was good that the training was in Tajik.
   2. I wish the training was conducted in Russian.
   3. Either Tajik or Russian is fine.

4. Were you satisfied with the training using the distance training system (using the internet and a computer or smartphone)?

   1. Not at all satisfied, 2. Not very satisfied, 3. Neither satisfied nor dissatisfied, 4. Satisfied, 5. Very satisfied

5. Please give your opinions on the distance training system (LMS).

   (Free answer)

6. Please give your impressions and opinions about this distance training on HAI prevention and control as a whole.

   (Free answer)

7. If you had the opportunity to take a training course using the distance training system in the future, would you like to take it? Also, please provide the reason why you chose that answer.

   1. I want to take the course, 2. I want to take the course depending on the training theme, 3. I do not know, 4. I do not want to take the course

Appendix 4: Training Material (PPT)

Definition and Types of Healthcare-associated Infection

1. Шарҳи эпидемиологӣ СДБ (сирояти дохилибеморхонагӣ)

1

Сирояти дохилибемористонӣ

- Сироятҳои дохилибеморхонаги (СДБ), ки онро сироятҳои нозокомиалӣ низ меноманд, сироятҳое мебошанд, ки ҳангоми нигоҳубин дар беморхона ё дигар муассисаи тандурустӣ ба вуҷуд омадаанд, ки ҳангоми қабул дар бемористон ҳузур надоштанд ё дар давраи инкубатсия буданд.
- Сирояте, ки беш аз 48 соат пас аз қабул рух медиҳад, одатан ҳамчун сирояти дохилибемохона ба ҳисоб меравад.

https://www.ernesthealth.com/2019/07/23/infection-prevention-in-hospitals/

2

4 СДБ асосӣ

1) Сирояти ҷарроҳӣ
2) Сирояти роҳҳои пешоброн
3) Пневмонияи госпиталӣ
4) Сироятҳои ба найчаҳо (катетер) алоқаманд

3

Сирояти ҷарроҳӣ

- Беморшавӣ 0.5 - 15%
- Дар кишварҳои рӯ ба тараққӣ хатари бештар аст
- Роҳҳои сироятёбӣ
  - экзогеннӣ: аз ҳаво, таҷҳизоти тиббӣ, ҷарроҳон ва дигар кормандон
  - эндогенни: аз микрофлораи пӯст ё дар майдони ҷарроҳӣ, ё камтар аз хуне, ки дар ҷарроҳӣ истифода мешаванд
- Контаминатсия (ифлосшавӣ) дар замони гузаронидани амалаи ҷарроҳӣ

4

Сирояти роҳҳои пешоб

- Роҷтарин СДБ
- 80% катетеризатсияии доимии пешобдон
- Маризшавии камтар нисбат ба диоар СДБ
- Камтар ба бактериемия ва марг мерасонад.

5

Пневмонияии госпиталӣ

- Пневмонияи алоқаманд ба
- Микроорганизмҳо
  Эндогенни:колонияҳои микроорганизмҳои меъда, роҳҳои ҳавоии болоӣ ва бронхҳо.
  Экзогеннӣ: аспобҳои олудашуда респираторӣ

https://www.express.co.uk/life-style/health/1256569/coronavirus-uk-ventilator-what-is-a-ventilator-how-many-ventilators-needed-uk

6

Пневмонияии госпиталӣ

- беморони гирифтори ташаннуҷ ё сатҳи ҳушашон кам
- Вирус респираторию сенцитиали дар шуъбаҳои кудакона
- Зуком, пневмонияи бактериявии дуюмдараҷа дар солхурдагон.
- Пневмонияи Легионелла ва Аспаргеллиус дар беморони бо системаи масъунияти паст
- Штаммҳои муқовимати чандгонаи туберкулез

7

Сироятҳои марбут ба катетери хунгардиш

- Сатҳи маризшавӣ : паст (5%)
  Сатҳи марг боло
- Стафилококки и кандидаи коагулазоманфии муқовимати чандгонаи
- Колонизатсияия микроорганизмҳо дар рагҳо

https://www.journalofinfection.com/article/S0163-4453(05)00173-8/abstract

8

Меъёрҳои соддакардашуда барои ташхиси СДБ

Намуди СДБ	Меъёрҳои содда
Сирояти ҷарроҳӣ	ҳама гуна ихроҷоти чирк, думал ё паҳн шудани носур (флегмон ёки чирку фасод) дар минтақаи захми ҷарроҳӣ дар давоми як моҳи пас аз ҷарроҳӣ.
Сирояти роҳҳои пешоб	Кишти мусбати пешоб (намудҳои 1 ё 2) муайян карда мешавад, ки ҳадди ақалл 105 бактерия / мл дошта бошад.
Пневмонияии госпиталӣ	Нишонаҳои респираторӣ гумонбар шудан мумкин аст, ки ҳангоми беморхона ҳадди ақалл ду аломатҳои зерин ба назар мерасанд: сулфа, балғами чирк, инфилтратсияи нав дар рентгени сина бо инфексияи мувофиқ.
Сироятҳои марбут ба катетери хунгардиш	Сироятҳои ба катетер алоқамандро бо аломатҳои илтиҳоб, лимфангит ё ихроҷшавиии чирк дар ҷои гузоштани катетер
Септисемия	Таб ё табларза ва ҳадди аққал як кишти мусбати хун

9

Дигар СДБ

- Сироятҳои пӯст ва бофтаҳои мулоим
- Гастроэнтерит
- Сирояти ротавирусӣ дар кӯдакон
- Клостридиум диффисил (Clostridium difficiie) дар калонсолон
- Синусит ва дигар сироятҳои дохили батнӣ, сироятҳои чашм ва конъюнктива
- Эндометрит ва дигар сироятҳо

10

Микроорганизмҳо

Бактерияҳо

- Бактерии комменсалӣ : коагулазо манфӣ стафилококкҳо, чубчамикробҳои (E. Coli)
- Бактерияҳои патогенӣ :
  - Чубчамикробҳои анаэробии
  - Бактерияҳои граммусбӣ
  - Бактерияҳои грамманфӣ
  - Дигар бактерияҳо

11

Микроорганизмҳо

Вирусҳо

- Гепатити В, вируси гепатити С, РСВ, ротавирус, энтеровирусҳо, ВНМО, Ситомегаловирус ва ғ...

Паразитҳо ва занбуруғҳо

- Лямблии
- Candida albicans, Aspergillus spp., Cryptococcus neoformans, Cryptosporidium

12

Манбаи сироят ва роҳҳои интиқол

1. Микрофлораи доимӣ ё гузарандаи бемор (сирояти эндогеннӣ)
- берун аз зисти табиӣ (роҳҳои пешобгузар)
- Осеби бофтаҳо (захм)
- Табобати носаҳеҳи антибиотикӣ (C. difficile, шаклҳои хамиртуруш)

13

Манбаи сироят ва роҳҳои интиқол

2. Микрофлораи дигар бемор ё корманд (сирояти экзогенни)
- тавассути тамоси мустақими беморон
- қатраҳо ё ғубори бо бактерияҳои бемор олудашуда
- тавассути кормандони олудашуда
- тавассути ашёи олудашуда

14

Манбаи сироят ва роҳҳои интиқол

3. Микрофлораи муассисаи тиббӣ (сироятҳои эндемикӣ ё сироятҳои экзогении эндемикӣ муҳити атроф)
- Об, минтақаҳои намнок
- Пушишҳо, таҷҳизот ва доруворӣ
- Маводи ғизоӣ
- Тиккаҳои хурди ғубор ва қатра

15

Одамон дар маркази падида ҳамчун захирагоҳ ва манбаи асосиимикроорганизмҳо ҳамчун интиқолдиҳандаи асосӣ, хусусан ҳангоми табобат ба унвони қабулкунандаи микроорганизмҳо, табдил ёфтани захирагоҳи нав мешаванд

16

2. Барномаи пешгирӣ ва назорати сироят (ПНС)

1

Пешгирӣ ва назорати сироят (ПНС)

Пешгирӣ ва назорати сироят (ПНС) ин

- як равиши илмӣ ва ҳалли амалист, ки барои пешгирии зарар аз сироят ба беморон ва мутахассисони соҳаи тандурустӣ пешбинӣ шудааст.
- Ба бемориҳои сироятӣ, эпидемиология, илмҳои иҷтимоӣ ва таҳкими системаи тандурустӣ асос ёфтааст.
- Дар соҳаи бехатарии беморон ва сифати нигоҳубин беназир аст.

2

Барномаи пешгирӣ ва мубориза бо сироят (ПНС)

Барномаи ПНС ин

- боҳи мунтаззам ва тасдиқшуда барои пешгирии сирояти нозокомиалӣ, устувори ба маводхои зидди микроби
- пешгири кардани пахншавии бемориҳои сироятӣ
- барномаи уфуқӣ(горизонтальная) буда маънои онро дорад, ки он ба тамоми ҷанбаҳои нигоҳубини беморон таъсир мерасонад ва дар ҳама шароити нигоҳубини беморон татбиқ карда мешавад.

Кумитаи назорати сироятӣ (ПНМ) ва Гурӯҳи назорати сироятӣ (ГНС) барои идоракунӣ ва татбиқи барномаи ПНС аксар вақт дар дохили иншоот таъсис дода мешаванд

3

Кумитаи назорати сироятӣ (КНС)

Форумеро барои иштироки байнисоҳавӣ ва ҳамкорӣ ва мубодилаи иттилоот дар бораи назорат ва пешгирии сироят фароҳам меорад.

Вазифаҳои КНС

- барои баррасӣ ва тасдиқи барномаи солонаи амалиётҳои назорати ва пешгирӣ, инчунин маълумоти назорати эпидемиологи ва муайян кардани самтҳои дахолат.
- таблиғи тачрибаи беҳтар
- омӯзиш ба кормандон оид ба назорати сироят ва бехатарӣ

4

Кумитаи назорати сироятӣ (КНС)

Вазифаҳои КНС (давомаш)

- барои таҳлили хавфҳои марбут ба технологияҳои нав
- назорат кардани хавфҳои сироятӣ бо дастгоҳҳо ва маҳсулоти нав то тасдиқ барои истифода
- таҳқиқ ва саҳмгузорӣ дар таҳқиқоти эпидемиологӣ
- бо дигар кумитаҳои беморхона муошират ва ҳамкорӣ кардан

5

Гурӯҳи назорати сирояти (ГНС)

- ГНС бояд дар беморхона ташкил карда шавад
- Ваколати мувофиқ барои идоракунии барномаи муассири назорати сироят
- нақшаи назорати сироятро таҳия ва нав кардан, ки он бояд аз КНС баррасӣ ва тасдиқ карда шавад

6

Гурӯҳи назорати сирояти (ГНС)

Вазифахои ГНС (давомаш)

- Барномаи назорати эпидемиологӣ барои ПНС
- Барнома барои истифодаи дорухои зидди сироятӣ
- Таъмини усулҳои нигоҳубини беморон
- Самаранокии усулҳои безараргардонӣ ва таъмизгардони
- Самаранокии системаҳо барои беҳтар кардани тозагии беморхонаҳо таҳия шудааст

7

Гурӯҳи назорати сирояти (ГНС)

Вазифахои ГНС (давомаш)

- Барномаҳои таълимӣ
- Маслиҳат, таҳлил ва роҳбарии мутахассисон дар тафтиш ва назорати эпидемия
- Ташаббусҳои минтақавӣ ва миллӣ оид ба назорати сироят

8

Нақши табибон

- риояи амалҳои мувофиқи гигиенӣ
- риояи усулҳое, ки аз КНС тасдиқ шудаанд
- ҷамъияти намунаҳои мувофиқи микробиологӣ
- огоҳ кардани ГНС дар бораи ҳолатҳои сирояти нозокомиалӣ
- риояи тавсияҳо оид ба истифодаи антибиотикҳо
- беморон ва кормандон оид ба усулҳои пешгирӣ маслиҳат медиҳанд

9

Нақши ҳамшираҳои тиббӣ

- Ҷорӣ кардани усулњои табобатҳои беморон барои назорати сироят
- Амалияҳо барои пешгирӣ ва паҳншавии сироят
- Барои ҳамаи беморон дар тамоми беморхонаҳо реҷаи мувофиқро нигоњ кардан

10

Ҳамшираи калони маъмурият

- иштирок дар Кумитаи назорати сироятӣ
- сиёсати нигоҳубини асептикӣ
- таҳияи барномаҳои таълимӣ барои кормандони тиб
- назорат аз болои љорї кардани усулҳои пешгирии сироят дар минтақаҳои махсус, аз қабили ҳуҷраи ҷарроҳӣ, шӯъбаи эҳёгарӣ, таваллуд ва кӯдаки навзод
- Мониторинги риояи сиёсати ҳамширагӣ.

11

Ҳамшираи шӯъба

- Гигиенаи мутобиқи сиёсати беморхона ва таҷрибаи хуби ҳамширагӣ дар шӯъба
- Мониторинги стандартҳои асептикӣ
- Паёми фаврӣ таҳти назорати ҳамшираи калон
- Ташаббуси ҷудо кардани беморон ва су
- Таъсири беморро ба сироят маҳдуд кунед
- Таъминоти бехатар таҷҳизотњои ҳуҷра, доруҳо ва лавозимоти нигоҳубини беморон

12

Ҳамшираҳои тиббии масъули назорати сироятӣ

- Сирояти нозокомиалиро ташхис кунад
- Навъи ПКИ ва микроорганизми муайян кунад
- Иштирок дар омӯзиши кадрҳо
- Назорати сироятҳои беморхонаҳо
- Тафтиши хуруҷ
- Сиёсати назорати сироят ва сиёсати нигоҳубини беморон
- Қоидаҳои маҳаллӣ ва миллӣ
- Муҳайё намудани хадамоти машваратии коршиносон

13

3. Озмоиши микробиологии клиникӣ

1

Микробиологияи клиникӣ

Барои табобати зидди микробҳо гузаронидани санҷишҳои лабораторӣ зарур аст.

- Ташхиси тахминӣ тавосути санҷиши Gram
- Хассосият бар доруворихои зиддимикробӣ

2

Муносибати дуруст бо намунаҳо

Ҷамъоварии дурусти намунаҳо
- Ба қадри имкон гирифтани намунахо пеш аз ворид намудани доруҳои зидди микробӣ
- Кам карадани олудашавии намунахо
- Гирифтани микдори кофии намуна

3

Муносибати дуруст бо намунаҳо

Чораҳои бехатари ҳангоми ҷамъоварӣ / интиқол
- Тавсияҳо оид ба чораҳои эхтиётткори риоя намоед
- Истифодаи воситахои мухофизати фарди
- Сатҳи болои атрофро олуда накунед
- Доду гирифти мустақимро кам кунед бо намунахо
- Ҳеҷ гоҳ сӯзандоруҳоро бо сӯзан интикол надихед

4

Муносибати дуруст бо намунаҳо

Интиколи (транспортировка) дурусти намуна
- Интиқоли фаврӣ ба озмоишгоҳ
- Роххои алтернативи хангоми набудани интиколи фаври барои намунахо

a) хун
b) дар зархои махсус доштани узвхои бадани ба харорат хассос.
c) намунаҳои кишти анаэробӣ
d) ихроҷ
e) CSF яъне моеъи мағзи сар ва спинали
f) кишти вирусӣ

5

Хассосияти микробҳо

1. Хассос ба ангезандаи зиддимикробӣ
2. Тобовар
3. Хассосияти миёна

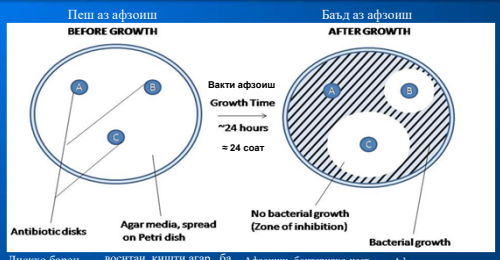
6

Санҷиши лабораториявӣ барои хассосияти зиддимикробӣ

- Санҷиши сифатан: санҷиши диски диффузия
- Санҷиши ниммикдори: санҷишҳои дақиқ
- Санҷиши миқдори: санҷишҳои консентратсияи минималии таъсиргузор (MIC) ё консентратсияи бактерисидӣ (MBC)

7

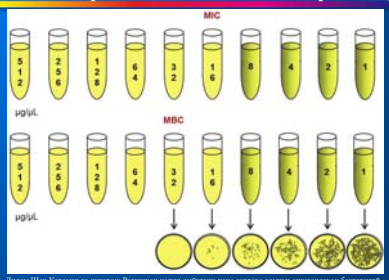
Озмоиши диффузии диск



https://www.wikiwand.com/en/Озмоиши диффузии диск

8

Санҷишҳои Консентратсияи ҳадди ақали ингибитсионӣ (MIC) ё Консентратсияи минималии бактерисидӣ (MBC)



Дидем Шен Карааи ва дигарон: Равишҳои чории омӯхтани нано заррачо ҳамчун ангезандаҳои бактериявӣ
DOI: 10.5772/68138

9

Нақши микробиолог

- Сару кор доштан бо намунаҳои беморон ва кормандон
- Тачрибаи ба исфодаиаи коркард бо намунаҳо
- Лабораторйяхои стандартикунонидашуда ва бехатар
- Санҷиши хассосияти зидди микробҳо
- Назорати безараргардони, тамизгардонӣ
- Хабардихии саривақтӣ ба Кумитаи назорати сироятӣ / Гурӯҳи назорати сироятӣ
- Гурухбандии дохили эпидемиологии микроорганизмҳои беморхона

10

Нақши озмоишгоҳи микробиологӣ

Мубориза бо тобоварии зидди микробҳо

- Санҷиши ҳассосияти ба антибиотикҳо
- Муайян намудани воситахои зидди микроби, санчишҳои иловагии зидди микроби
- Паҳншавии тобоварии бактериявӣ
- Огоҳии фаврӣ ба Кумитаи назорати сироятӣ / Гурӯҳи назорати сироятӣ

11

Нақши муҳимтарин:

- Муайян кардани хассосият ба антибиотик
- мусоидат ба духтур дар интихоби табобат.

12

4. Пешгирӣ ва муборизa бо паҳншавии бемориҳо

1

Муайян кардани мавҷудияти (наличие) паҳншавии беморӣ

Назорат
- тасдиқ кардани мавҷудияти (наличие) паҳншавии беморӣ
- коркарди стандартии муайян кардани ҳолат
- таҳияи кардани рӯйхати сатр ба сатр
- сохтани каҷии эпидемия:
  нуқтаи паҳншавӣ
  манбаи (сарчашма) бефосила

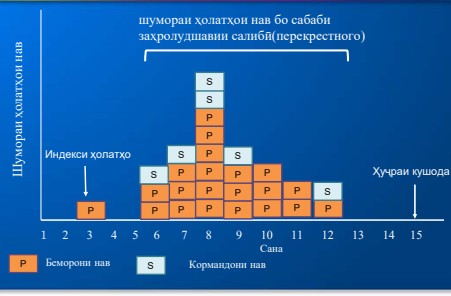
2

Рӯйхати сатр ба сатр

Санаи оғоз	Номи бемор	Синну сол	Ҷинс	Нишонаҳо	Санаи қабул	Омилҳои хавф	Санаи ҷамъоварии намудан	Озмоиш фаври барои микроорганизм	Натиҷа	Рақами ҳуҷра
03.авг.21	А.А	50	М	дарунравй, қайкунй, табларза	02.авг.21		06.авг.21	норовирус	мусбат	#1
06.авг.21	Б.Б	59	М	дарунравй, табларза	30.июл.21		09.авг.21	норовирус	мусбат	#1
06.авг.21	В.В	45	М	дарунравй, қайкунй	01.авг.21		09.авг.21	норовирус	мусбат	#1
06.авг.21	Ҳамшира А	25	З	дарунравй				норовирус	инфо нашудааст	
07.авг.21	Б. А	65	З	дарунравй, табларза	01.авг.21	деменция	09.авг.21	норовирус	мусбат	#2
07.авг.21	В.И	62	М	дарунравй, табларза	02.авг.21		09.авг.21	норовирус	мусбат	#1
07.авг.21	П.П	38	М	дарунравй, табларза	03.авг.21		09.авг.21	норовирус	мусбат	#3
07.авг.21	Ҳамшира В	20	З	қайкунй				норовирус	инфо нашудааст	
08.авг.21	С.Р	58	З	дарунравй, қайкунй	01.авг.21		09.авг.21	норовирус	мусбат	#2
08.авг.21	Р.Г	62	М	дарунравй, қайкунй, табларза	30.июл.21	деменция	09.авг.21	норовирус	мусбат	#3
08.авг.21	Х.Х	45	З	дарунравй, табларза	02.авг.21		09.авг.21	норовирус	мусбат	#4
08.авг.21	М.Ж	58	З	дарунравй, табларза	01.авг.21		09.авг.21	норовирус	мусбат	#4
08.авг.21	З.Ш	62	М	табларза	02.авг.21	нуқсонҳои шунавой	10.авг.21	норовирус	мусбат	#5
08.авг.21	Л.О	45	З	дарунравй, табларза	02.авг.21		09.авг.21	норовирус	мусбат	#6
08.авг.21	Доктор В	50	М	дарунравй, табларза			10.авг.21	норовирус	мусбат	
08.авг.21	Ҳамшира С	19	З	қайкунй			10.авг.21	норовирус	мусбат	
09.авг.21	С.Д	40	З	дарунравй, қайкунй	02.авг.21		10.авг.21	норовирус	мусбат	#6
09.авг.21	У.Е	62	М	дарунравй, қайкунй, табларза	05.авг.21		10.авг.21	норовирус	мусбат	#5
09.авг.21	В.П	52	З	дарунравй, табларза	05.авг.21		11.авг.21	норовирус	мусбат	#4
09.авг.21	Ф.Ж	30	З	дарунравй, қайкунй			11.авг.21	норовирус	мусбат	
10.авг.21	У.К	35	М	қайкунй	05.авг.21		10.авг.21	норовирус	мусбат	#7
10.авг.21	Д.К	62	М	дарунравй, қайкунй, табларза	05.авг.21		10.авг.21	норовирус	мусбат	#5
11.авг.21	Ф.А	56	З	дарунравй, табларза	06.авг.21		10.авг.21	норовирус	мусбат	#6
11.авг.21	Р.Н	61	М	дарунравй, табларза	06.авг.21		11.авг.21	норовирус	мусбат	#5
11.авг.21	Т.Т	60	М	дарунравй, қайкунй, табларза	07.авг.21		11.авг.21	норовирус	мусбат	#3
12.авг.21	К.К	38	З	дарунравй, қайкунй	06.авг.21		12.авг.21	норовирус	мусбат	#4
12.авг.21	Ҳамшира Д	22	З	қайкунй			13.авг.21	норовирус	мусбат	
13.авг.21	набудани ҳолатҳо (Отсутствие случаев)									
14.авг.21	набудани ҳолатҳо (Отсутствие случаев)									
03.авг.21	набудани ҳолатҳо (Отсутствие случаев)									

3

Каҷии эпидемияе, ки паҳншавиро аз манбаи нуқтамонанд нишон медиҳад



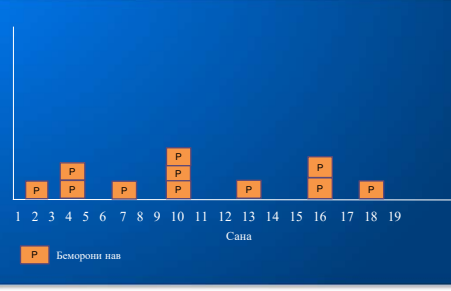
4

Рӯйхати сатр ба сатр

Санаи оғоз	Номи бемор	Синну сол	Ҷинс	Нишонаҳ	Санаи қабул	Беморӣ ҳангоми қабул	Санаи ҷамъоварии намудан	Озмоиш барои микроорганизм	Натиҷа	Рақами ҳуҷра
02.авг.21	А. Акрам	50	М	пневмония	20.июл.21	Захми меъда	05.авг.21	кишти балғам	СТМТ мусбат	#1
02.авг.21	Б. Бобир	59	М	сепсис	21.июл.21	Холелитиаз	09.авг.21	кишти хун	СТМТ мусбат	#1
04.авг.21	В. Восир	45	М	сирояти ҷарроҳии захм	21.июл.21	Захми меъда	06.авг.21	кишт аз захм	СТМТ мусбат	#3
07.авг.21	Г. Гулшан	30	З	тонзиллит	02.авг.21	Аппендитсит	09.авг.21	кишти молишак	СТМТ мусбат	#2
10.авг.21	Д. Дидор	62	М	сирояти катетерии пешоброн	02.авг.21	Санги пешобдон	13.авг.21	кишт (муҳити) катетерӣ	СТМТ мусбат	#1
10.авг.21	Е.Есиуман	58	З	сирояти ҷарроҳии захм	03.авг.21	Холелитиаз	12.авг.21	кишт аз захм	СТМТ мусбат	#2
10.авг.21	Ж.Жасмин	56	З	пневмония	04.авг.21	Чурраи қадкашак (Паховая грыжа)	13.авг.21	кишти балғам	СТМТ мусбат	#4
13.авг.21	З.Зариф	57	М	пневмония	06.авг.21	холелитиаз	16.авг.21	кишти балғам	СТМТ мусбат	#3
16.авг.21	И.Исроф	45	М	сирояти ҷарроҳии захм	02.авг.21	Варикози суркрӯда	18.авг.21	кишт аз захм	СТМТ мусбат	#3
16.авг.21	К.Карина	40	З	сепсис	10.авг.21	Қабзияти рӯда (Кишёчная непроходймость)	20.авг.21	кишти хун	СТМТ мусбат	#2
18.авг.21	Л.Лайло	49	З	пневмония	15.авг.21	Грижа	21.авг.21	кишти балғам	СТМТ мусбат	#4

5

Каҷии эпидемияе, ки манбаи бефосилаи паҳншавиро нишон медиҳад



6

Идоракунии паҳншавии эпидемиологӣ

Назорати паҳншавии эпидемиологӣ
- таҳия ва санҷиш кардани фарзия (гипотезу)
- қабул кардани назорати чораҳо
- нигоҳ доштани алоқа
- санҷиши кормандон ва муҳити зист
- навиштани ҳисобот оид ба паншавӣ

7

Стафилакокки тилоранг ба метисиллин тобовар (СТМТ)

- Манбаи сирояти нозокомиалӣ дар муассисаҳои махсус
- Сирояти ба штамҳои Стафилакокки тилоранги ҳассос, шабеҳ буда.

https://www.lshtm.ac.uk/newsevents/news/2018/routine-genomic-surveillance-mrsa-can-detect-unsuspected-outbreaks

8

Стафилакокки тилоранг ба метисиллин тобовар (СТМТ)

Омилҳои хавф дар беморони гирифтори СТМТ
- Минтақаҳои (ҷойҳои) имконпазири колонизатсия ё ин ки сироят
- Муддати дароз дар беморхона будан
- Беморони пиронсол
- Беморон дар шӯъбаҳои махсус (бо ҳолатҳои вазнин)
- Интиқоли тез-тези беморон ва кормандон
- Истифодаи аз ҳад зиёди антибиотикҳо
- Шумораи зиёди беморон
- Норасоии кормандон
- Набудани шароити мувофиқ барои шустани дастон ва ҷудогузории мувофиқи беморон

9

Дастур оид ба назорати сироят

1. Беморро дар ҳуҷраи алоҳида ҷудо кунед.
2. Шумораи парастор барои нигоҳубини бемор кам карда шавад; мисол, кормандони махсус барои нигоҳубини бемор бо СТМТ.
3. Дар вақти нигоҳубини бемор чораҳои дахлдори назорати сироятро риоя кунед.

Муфассал (Подробности) дар слайдҳои зерин оварда шудаанд

10

Дастур оид ба назорати сироят

3. Чораҳои дахлдори назорати сирояти бояд муолиҷаи зеринро дар бар гиранд

a. Чораҳои пешгири стандартӣ ва тамосиро(иртиботии интикол) риоя кунед, ҳангоми ворид шудан ба ҳуҷра хилат ва дастпӯшҳоро истифода баред.

b. Мувофиқи чораҳои пешгирии стандартӣ ниқоб барои рӯй ва айнак ё ин ки ниқоби муҳофизатии рӯй, ҳангоми ичрои муолиҷа, ки метавонанд ба пайдоиши пошидан ё ин ки пошидан ҳангоми кор бо захм, ҷабиши маводи олудашавии бо СТМТ

c. Гигиенаи дастро бо маводҳои мувофиқ ичро кунед

11

Дастур оид ба назорати сироят

3. Чораҳои дахлдори назорати сирояти бояд муолиҷаи зеринро дар бар гиранд

d. Ашёҳои яккаратаро, ки тоза кардан ва безарар кардани онҳо байни беморон ғайриимкон аст, ҷудо кунед, мисол: лентаи часпакдор, бо матоъ пушонидашудаи саростини (манжеты) дастгоҳ барои санҷидани фишори хун ва онҳоро танҳо барои беморони гирифтори СТМТ истифода бурдан лозим аст.

e. Чораҳои эҳтиёти тамосиро назорат ва қатъиян риоя кунед.

12

Дастур оид ба назорати сироят

4. Кормандони мувофиқи тиббиро омӯзонед ва маълумот диҳед оиди мавҷудияти беморон бо СТМТ ва зарурати риояи чораҳои пешгирӣ ҳангоми тамос.
5. Муассисаҳои тиббӣ бояд корти беморро барои нишон додани сирояти /колонизатсияи СТМТ қайд кунанд.

13

Дастур оид ба назорати сироят

6. Пеш аз интиқол ё қабул додани бемор бо шӯъбаи давлатии тандурустии ва / ё маҳаллӣ ва СЭС машварат кунед.
7. Боварӣ ҳосил кунед, ки ҳангоми интиқол вазъи бемори бо СТМТ ва чораҳои зарурии назорати сирояти хабар дода шудааст.

14

5. Тоза, безараргардонӣ ва тамизгардонии таҷҳизоти тиббӣ ва дастгоҳҳо.

1

Таснифи таҷҳизоти безараргардонӣ

Муҳим (критический)
- Асбобҳои ҷарроҳӣ, дастпӯшакҳо ва катетерҳои пешобронӣ ва ғайра.

Ниммуҳим
- Терапияи нафаскашӣ ва таҷҳизоти анестезионӣ, даҳанаҳои (воронки) маҳбалӣ ва зермонакҳои (подкладен) матогии бисёркарата ва ғайра.

Номуҳим (Не критично)
- Манжетаҳои чен кардани фишори хун, стетоскопҳо, сурби ЭКГ ва ғайра.

2

Лаҳзаҳои асосии тозакунии асбобҳо ва дигар ашеҳо

3

Деконтаминатсия/Безараргардонӣ

Маҳлул
- дар маҳлули 0,5% хлор
- 10 дақиқа пеш аз шустан

Партовҳоро ба контейнери герметикӣ партоед.

Ҳамаи сатҳҳоеро деконтаминатсиянамоед.
- бо матои бо маҳлули 0,5% хлоркардашуда тоза карда

Дарҳол бо оби хунук шуста кунед

Дастпӯшакҳоро бо дарун ба дарун кашед

4

Деконтаминатсия/Безараргардонӣ

Тавсия:
- Ду контейнер дар утоқи амалиётӣ ё утоқи ҷарроҳӣ гузошта мешаванд

Маслиҳатҳо оид ба деконтаминатсия:
- Истифода бурдани зарфҳои пластикӣ
- Асбобҳои металлии дорои сарпӯши галванирот нигоҳ надоред

Мақсади деконтаминатсия:
- аз бемориҳои ҷиддӣ муҳофизат намудани шахсони бо асбобҳои ҷарроҳӣ ва дигар ашёҳо коркунандае мебошан

5

Шустан

Барои нест кардани ҳамаи изҳои ифлосшавӣ асбобҳоро

Баъди шустани асбоб :
- ба воситаи шишаи калонкунанда (лупа) аз назар гузаронидан лозим
- чайқонида, хушконидан, печонидан ва тамгагузори намудан лозим

Дастпӯшак пӯшед

Воситаи муҳофизати чашмҳо ва ҳангоми мавҷуд будан пешдоманҳои пластикӣ пӯшед

Пешгирӣ намудани пошхӯрӣ

6

Таъмизгардони

ХИМИЯВӢ	АВТОКЛАВКУНӢ	ГАРМИИ ХУШК
То 10-24 соат тар кардан	Фишор 106 kPa (15 Lbs/in^2) 121°C (250 F) 20 дақиқа нопечонда 30 дақиқа печонда	170°C 60 Дақиқа

7

Таъмизгардони бо автоклавкунонӣ

- Асбобҳоро ду қабат дар матоъ ё қоғази паҳнкардашуда печондан, усули печондани лифофагӣ ё квадратиро истифода баред.
- Ашёи печондашударо ба таври мувофиқ стерилизатсия кунед
- Шартҳои таъмизгардониро (вақт, ҳарорат ва фишорро) дар дафтар нависед.
- Ҳар як пуркунӣ бояд бо истифода бурдани усулҳои механикӣ ва химиявӣ назорат карда шавад
- Автоклавҳо ҳамарӯза бояд тафтиш карда шаванд.

8

Таъмизгардони бо гармии хушк

- Асбобҳои металлӣ ё шпритсҳои шишагинро ба контейнери металлии сарпӯшдор гузошта, бо сарпӯш пӯшонед
- Таносуби зерини ҳарорату вақт тавсия дода мешавад:
  - 170C (340F) 60 дақиқа
  - 160C (320F) 120 дақиқа
  - 150C (300F) 150 дақиқа
  - 140C (285F) 180 дақиқа
  - 121C (250F) тамоми шаб
- Контейнери хунукшударо гирифтан ва барои нигоҳдорӣ гузоштан мумкин аст

9

Таъмизгардонии химиявӣ

- Маҳлули тозаи моддаи химиявиро барои таъмизгардони чи хеле ки дар дастурамали истеҳсолкунанда нишон додаст шудааст, тайёр намоед ё коршоямии маҳлули тайёрро тафтиш намоед.
- Ашёҳои шусташуда ё хушккардашударо дар маҳлули 2-4%-и глютаралдегид (Cidex®) ё Ортофталальдегид (OPA), ё надуксусная кислота ва ё маҳлули 8% формалдегид гузошта, ҳамаи ашёҳоро пурра пӯшонед.
- Ашёҳоро аз маҳлули химиявӣ бо дастпӯшакҳои таъмиз ё гираи (пинсети) таъмиз ё бо роҳи доштан гиред.
- Барои баратараф намудани ҳамаи изҳои препарати химиявӣ ашёҳоро бодиққат бо оби тамизшуда чайқонед

10

Безараргардонии амиқ (БА)

БО ОБИ ҶУШ Ё БУҒ	ХИМИЯВӢ
БО САРПӮШ И ПӮШИДА ТО 20 ДАҚИҚА	ТО 20 ДАҚИҚА ТАР КАРДАН

11

Безараргардонии амиқ бо роҳи ҷӯшонидан

Дар об ҷӯшондан усули самаранок мебошад

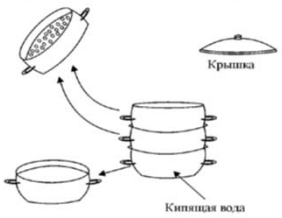
Мӯҳлати хизмати асбобҳоеро, ки тез-тез ҷӯшонда мешаванд, чӣ гуна дароз кардан мумкин аст

- Дар оғози ҳар рӯз пеш аз истифодабарӣ обро муддати 10 дақиқа ҷӯшонед
- Дар давоми рӯз аз худи ҳамин об истифода бурда
- Дар охири ҳар рӯз обро резед ва бойлер ё бакро шӯед, то ин ки қабатҳои оҳак бартараф карда шаванд.

12

Дезинфексияи чуқур Тозакунӣ бо буғ.

Дегчаи буғи (мантупазак) ки барои безараргардонии амик истифода бурда мешавад



13

Безараргардонии химиявӣ

Барои безаркунандагонии химиявӣ одатан онҳо истифода бурда мешавад

- хлор, глютаралдегид, орто-офтальалдегид (OPA), диоксиди хлор, надуксусная кислота, формалдегид ва перекиси гидроген (водород)

14

Нигаҳдории маводи хушкида

Нуқтаҳои асосӣ

- Майдони нигоҳдорандаро тоза, хушк ва аз чангу нах тоза нигоҳ доред
- Ҳарорат ва намиро назорат кунед
- Ҷойгоҳи мувофиқро нигоҳ доред
- Сана ва лавозимоти иловагиро қайд кунед
- Пеш аз истифодаи ягон ашёи хушкида, халтаро аз назар гузаронед.

15

6. ТАШКИЛ НАМУДАНИ НЕСТ КАРДАНИ ПАРТОВҲО

1

Муносибат бо партовҳои дохили муассисаҳои тандурустӣ

Партовҳои олуданашуда хатари заҳролудшавии кормандони бо онҳо сарукор доштаро, ифода намекунанд

- қоғаз, хокрӯба, шишаҳо, қуттиҳо, контеннейрҳои пластмассӣ ва таом
- Онҳоро бо усулҳои муқаррарӣ нест кардан мумкин аст

2

Муносибат бо партовҳои дохили муассисаҳои тандурустӣ

Партовҳои олудашуда эҳтимолан сироятнок ё заҳролуд мебошанд ва агар ба таври лозимӣ бартараф карда нашаванд, барои кормандону аҳолӣ хатар эҷод менамоянд

- хун, рим, пешоб, ихроҷҳо ва дигар моеъҳои биологии организмро
- маводи бандинабандӣ
- партовҳои аз шӯъбаи ҷарроҳӣ ва лаборатория

3

Муносибат бо партовҳои дохили муассисаҳои тандурустӣ

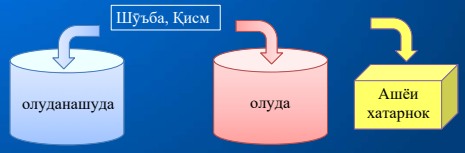
Ашёҳои хатарнок зарари эҳтимолие, ки барои муҳити атроф расонида метавонанд

- партовҳои химиявӣ ва фармасевтӣ
- партовҳои ситотоксикӣ
- партовҳои дорои миқдори зиёди металлҳои вазнин
- зарфи аэрозолии(баллончаҳои аэрозолӣ)

4

Муносибат бо партовҳои дохили муассисаҳои тандурустӣ

Партовҳоро дар ҷойи пайдоишашон ба олудашуда ва олуданашуда ҷудо намоед



Пас аз омехта шудан, ҳеҷ гоҳ кӯшиш накунед!

5

Партовҳои сахти олудашуда

- Партовҳои олудашударо аз олуданашуда алоҳида бартараф намоед
- Партовҳои олудашуда бояд ҳангоми ё фавран баъди амалиёт партофта шаванд
- Контейнерҳои пластмассӣ ё металлии начакандаи дорои сарпӯшҳои нағз маҳкамшавандаро истифода баред
- Ҷамъоварии партовҳоро дар ихтиёр дошта бошед
- Бояд дастпӯшакҳои ғафси резинӣ (хоҷагӣ) ва аз рӯи вазият дигар воситаҳои фардии муҳофизатро пӯшанд

6

Партовҳои моеъи олудашуда

- Воситаҳои фардии муҳофизат пӯшед
- Партовҳоро эҳтиёткорона ба дастшӯяки хоҷагӣ ва нишастгоҳи халоҷо
- Пеш аз шустан ба маҳлули 0,5%-и хлор муддати 10 дақиқа ғуттонед.
- Дастпӯшакҳои хоҷагиро ҳар рӯз ё ҳангоме ки ба таври намоён ифлос шудаанд, шӯед ва хушк кунед.
- Дастҳоро шӯед ва хушк кунед ё бо воситаи зиддиуфунӣ тоза кунед, чи хеле ки дар боло баён шудааст.
- Партовҳои моеъро ҳамчунин дар ҳоҷатхонаҳои ҳавлигӣ рехтан мумкин аст

7

Ашёҳои тез

- Ашёҳои тезро ба контейнерҳои начаканда бо Қисми тезашон ба пеш партоед.
- Боварӣ ҳосил намоед, ки пеш аз оғози амалиёт контейнерҳои партофтани ашёҳои тез дар ҷояшон гузошта шудаанд.
- Сарпӯшакро такроран ба сӯзан напӯшонед ва сӯзану шприцҳоро ба қисмҳо ҷудо накунед.
- Ҳангоми то се ҷоряк пур шудан контейнери дорои ашёҳои тезро мӯҳр занед ва нест кунед.
- Барои кушодани контейнери дорои ашёҳои тези мӯҳрзадашуда кӯшиш накунед.
- Дар ҳуҷраҳое, ки ҳузур доштани аёдаткунандагон имкон дорад, контейнерҳо бояд барои кӯдакон дастнорас бошанд.

8

Дуруст нест кардани партовҳои олудашуда

Нест кардани партовҳо

- Ҳамеша ҳангоми бо партовҳо сару кор доштан дастпӯшакҳои ғафс (хоҷагӣ) ва воситаҳои мувофиқи муҳофизати фардиро истифода баред.
- Ҳамеша баъди иртибот бо партовҳо дастҳоятонро шӯед.
- Бо партовҳо эҳтиёткорона муносибат намоед, то ин ки рехтан ва пошхӯрии онҳоро пешгирӣ намоед.
- Ашёҳои олудашударо аз як контейнер ба дигараш нарезед.

9

Дуруст нест кардани партовҳои олудашуда

Чӣ гуна зарфи истифосшудаи химиявиро бартараф кардан мумкин аст

- Зарфҳои шишагиро бодиққат бо об шӯед
- Зарфҳои пластикиро, се бор бо об шӯед
- Контейнерҳои партовҳои олудашударо ҳар дафъа баъди холикунӣ шӯед

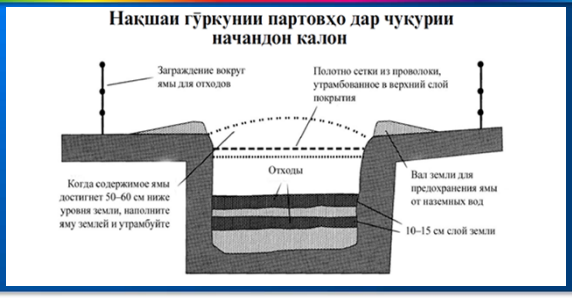
10

Сӯзондан

- Ахлотсӯзонакҳои муқаррарӣ аз маводҳои маҳаллӣ
- Сӯзондани кушода тавсия дода намешавад
- Оташдонҳои бочкагии ахлотсӯзонӣ истифода

11

Гӯркунии партовҳо



12

Автоклавкунонии партовхо

- истифодаи буги сер дар харорати 134°С ва фишори 2,2 МР дар муддати 10 дакик

Дар минтакахои автоклавкунони

- Бо кубурхои обкаш барои партовхо, ва оби равони тоза барои шустушуи контейнерхо ва алохида барои шустани дастон.
- Токхо барои контейнерхо, барои нигохдории дезинфектантхо ва маводхои шустушуй
- Барои холатхои садамави бояд бо дорукутти таъмин бошад
- Шамолдихии фаъол дошта бошад
- Дари автоклавмувофики материали хатарноки биологи рамзгузори карда шавад.

13

7. Пешгирии сироятҳои дохили беморхонавӣ

1

Сироятҳои дохили беморхонавӣ

1) Сироятҳои ҷои ҷарроҳӣ

2) Сироятҳои роҳҳои пешоб

3) Пневмонияи дохили беморхона

4) Сироятҳои катетерии рагҳо

2

Сироятҳои ҷои ҷарроҳӣ

Омилҳое, ки ба такроршавии сироят таъсир мерасонанд

- Техникаи ҷарроҳӣ
- Сирояти эндогении захм ҳангоми ҷарроҳӣ
- Давомнокии ҷарроҳӣ
- Вазъи асосии бемор
- Шароити ҳуҷраи амалиётӣ
- Организмҳои аз тарафи гурӯҳи амалиётӣ ҷудошуда

3

Сироятҳои ҷои ҷарроҳӣ

1. Муҳити утоқи ҷарроҳӣ
   - Ҳар саҳар: тоза кардани ҳама сатҳҳои болоии ашёҳо (сатҳҳои уфуқӣ)
   - Байни ҳар як амалиёт: тоза ва безараргардонии сатҳҳои уфуқӣ ва ҳама ашёи ҷарроҳӣ.
   - Дар охири рӯз: тоза кардани ҳуҷраи ҷарроҳӣ бо истифодаи маводи тавсияшавандаи дезинфексионӣ
   - Ҳафтае як маротиба: тозакунии пурраи тамоми утоқи амалиётӣ, аз ҷумла ҳамаи ҳуҷраҳои вобаста ба он, ба монанди утоқи либосивазкунӣ, ҳуҷраҳои техникӣ, шкафҳо.

4

Сироятҳои ҷои ҷарроҳӣ

2. Кормандони утоқи амалиётӣ
   - Шустани даст
   - Либоси утоқи амалиётӣ дастпӯшакҳо, халати стерилии ҷарроҳӣ, кӯлоҳ ва ниқоби ҷарроҳӣ
   - Кор дар ҳуҷраи амалиётӣ одами кам, камтар ҳаракат ва сӯҳбат кардан

5

Сироятҳои ҷои ҷарроҳӣ

3. Омодагии бемор пеш аз ҷарроҳӣ
   - Мавҷудияти ҳар гуна сироят : ошкор шуд ва табобат гирифт
   - Бемор: пеш аз ҷарроҳӣ шудан оббози бояд кард
   - Ҷои ҷарроҳӣ: Бо собун ва об шуста, баъд пӯстро бо доруи зидди микробҳои пеш аз амалиётӣ тоза кунед.
   - Бемор: Бо простинҳои стерилӣ пӯшонида мешавад.

6

Сироятҳои ҷои ҷарроҳӣ

4. Профилактикаи зидди микробҳо
   (ба Модули 10 нигоҳ кунед)
5. Назорати сирояти ҷои ҷарроҳӣ

- Сатҳи сироят бояд табақабандӣ карда шавад: аз рӯи сатҳи ифлосшавии бактерияҳои эндогенӣ ҳангоми ҷарроҳӣ, ва давомнокии амалиёт ва ҳолати асосии бемор
- ҷарроҳони алоҳида, аз рафти ҳолат бояд хабардор карда шаванд

7

Сироятҳои роҳҳои пешоб (СРП)

Тадбирҳои самараноки пешгирии СРП

- Ҳуддорӣ аз катетеризатсияи уретрия
- маҳдуд кардани мӯҳлати заҳкашӣ
- Практикаи дурусти асептикӣ
- Гигиенаи шустани дастон
- Дастпӯшакҳои стерилӣ барои воридсозӣ
- Тоза кардани перинал бо маҳлули антисептикӣ
- Бе осеб гузоштани катетер
- Системаи дренажии пӯшида

8

Сироятҳои роҳҳои пешоб (СРП)

Дигар амалҳои тавсияшаванда

- Нишондиҳандаи хуби бемор
- Гигиенаи мувофиқи перинал
- Омӯзиши лозимӣ барои кормандон
- Дренажии бемонеаи масона

Масона нейрогенӣ

- Агар имконпазир бошад, аз катетерҳои доимӣ ҳуддорӣ кунед.
- Катетеризатсияи фосилавии пешобро тоза кунед

9

Чораҳои пешгирӣ

Намуди сироятҳои дохили беморхона	Исбот шудааст, ки самаранок аст	Исбот шудааст, ки самаранок нест
Сироятҳои утоқи ҷарроҳӣ	• Техникаи ҷарроҳӣ • Муҳити тозаи корӣ • Либоси кормандон • Маҳдудияти будубоши пеш аз ҷарроҳӣ дар беморхона • Души пеш аз ҷарроҳӣ ва омодасозии маҳаллии пӯсти бемор • Пешгирии оптималии антибиотик • Амалияи асептикӣ дар утоқи ҷарроҳӣ • Назорати ҷароҳатҳои ҷарроҳӣ	• Фумигация • Тарошидани пеш аз амалиёт
Сироятҳои роҳҳои пешоб	• Давомнокии катетерро маҳдуд кунед • Техникаи тазриқи асептикӣ • Нигоҳдории дренажи пӯшида	• Профилактикаи системавии антибиотик • Обёрии масона ё чакондани маҳлули шӯрии муқаррарӣантисептик ё антибиотик • Антисептика ба халтаи дренажӣ илова карда шуд • Катетерҳои болопӯшшудаи зидди микробҳо • Ҳар рӯз тозакунии антисептикии перинал

10

Пневмонияи дохили беморхона

1. Беморон бо дастгоҳҳои ҳаводиҳии сунъӣ дар шӯъбаҳои эҳёгарӣ

- Дезинфексияи дуруст ва нигоҳубини истифодаи найҳо, респираторҳо ва ҳаво бо мақсади маҳдуд кардани ифлосшавӣ
- Ягон хел тағироти мунтазам ба занҷирҳои вентилятсия
- Аз анасид ва маҳкамшавиҳои ҳаво (H2) ҳуддорӣ намудан
- Тозакунии стерилии трахейҳо.
- Ҳамшира дар ҳолати сар ба боло

11

Пневмонияи дохили беморхона

2. Шӯъбаҳои тиббӣ

- Маҳдуд кардани доруҳое, ки шуурро вайрон мекунанд, (седативҳо, маводи мухаддирдор)
- Мавқеи нимхоб
- Нагузоштани хӯрдани ғизои шифоҳӣ дар беморони гирифтори мушкилоти фурӯбарӣ
- Пешгирӣ намудани беморони гирифтори нейтропеникӣ ё трансплантатсияшуда аз спораҳои замбӯруғӣ

12

Пневмонияи дохили беморхона

3. Шўъбаҳои ҷарроҳӣ
- Ҳама дастгоҳҳои инвазивии стерилӣ, ки ҳангоми наркоз истифода мешаванд
- Анестетистҳо: пушидани дастпӯшакҳо ва ниқоб ҳангоми гузаронидани нигоҳубини трахеяи вирусӣ ё венагӣ ё эпидуралӣ
- Физиотерапияи пеш аз амалиёт бо бемории музмини нафас.

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Пневмонияи дохили беморхона

4. Беморони неврологии трахеостомия (бо вентилятсия ё бе вентилятсия)
- Тозакунии (ҷабиши) стерилӣ дар басомади мувофиқ
- Тоза ва безараргардонии лозимии респираторҳо ва дигар дастгоҳҳо.
- Физиотерапия барои дренажии секресияҳо.

14

Сирояти катетерии рагҳо

Амалҳои асосӣ барои ҳама катетерҳои рагҳо
- агар нишондоди тиббӣ набошад катетеризатсия нагузоред.
- Сатҳи баланди асептика барои гузоштани катетер ва нигоҳубин
- маҳдуд кардани истифодаи катетерҳо
- Омода кардани моеъҳо асептикӣ ва истифодаи фаврӣ
- Омӯзиши кадрҳо дар гузоштан ва нигоҳубини катетер.

15

Сирояти катетерии рагҳо

1. Катетерҳои иловагии рагҳо
- Гигиенаи дастҳо пеш аз сарукоргирӣ бо катетер
- Пӯсти ҷои воридсозиро шуста ва дезинфексия кунед
- Хатти сӯзандорӯ (капельница) на бештар аз алишкунии катетерҳо иваз карда мешавад
- Одатан иваз намудани бинтҳо лозим нест
- Агар сирояти маҳаллӣ ё флебит ба амал ояд, катетер бояд фавран хориҷ карда шавад.

16

Сирояти катетерии рагҳо

2. Катетерҳои асосии рагҳо
- Ҷойи воридсозиро бо маҳлули антисептикӣ тоза кунед
- Ниқоб, кӯлоҳ, дастпӯшҳои стерилӣ ва халат
- Шустани дастон ва ё молидани маҳлули лозимӣ барои амалиёт
- Нигоҳубини мувофиқи асептикӣ
- Тағири хатҳои сӯзандорӣ на бештар аз як маротиба дар се рӯз
- Докаи стерилӣ ё бинти шаффоф барои барои пӯшонидани ҷои катетер.

17

Сирояти катетерии рагҳо

2. Катетерҳои асосии рагҳо (Идома дорад)
- Дар сурати гумонбар шудани сирорят, сими дастури катетерро иваз накунед.
- Ба қадри имкон, катетери люмени ягонаи яккарата
- Минтақаҳои субклавӣ / ҷогӣ ё феморалӣ
- Агар лозим бошад, катетерҳои марказиро ба канор ҷойгир кунед.

18

Сирояти катетерии рагҳо

3. Катетерҳои пурраи васлкунии марказии рагҳо

- Душ ва имплантатсияи пеш аз ҷарроҳӣ
- Омодаи ҷои амалиёт аз шустушӯй ва антисептика иборат мебошад
- Ниқоб, кӯлоҳ, дастпӯшҳои стерилӣ ва халат
- Системаи пӯшида ҳангоми истифодаи дастгоҳ тағир додани хатҳо:
  - ҳар 5 рӯзи истифодаи доимӣ
  - ҳар як дахолат барои истифодаи даврӣ
  - пас аз интиқол додани хун, барои перфузияҳои қатъшуда

19

Чорахои пешгирӣ

Намуди сирояткои дохилибеморхонавй	Исбот шудааст, ки самаранок аст	Исбот шудааст, ки самаранок нест
Пневмонияи дохилибеморхонавй	**Вобаста бо дастгоҳи ҳаводиҳии сунъй** - Интубатсияи асептикӣ ва ҷаббидан, Маҳдудияти давомнокӣ, Вентилятсияи ғайриинвазӣ **Дигарон** - Ваксинаи зуком барои кормандон, сиёсати изолятсия, оби стерилӣ барои оксиген ва терапияи аэрозол, пешгирии легионелла ва аспергиллус ҳангоми таъмир	- Безараргардонии узвҳои ҳозима барои ҳамаи беморон - Силсилаи нафасгирии бо дастгоҳи ҳаводиҳии сунъй ҳар 48 ё 72 соат иваз мешавад
Сирояти катетерии рагҳо	**Ҳама катетҳо** - Системаи пӯшида, Давомнокии маҳдуд, Омодасозии ҷои пӯсти амалиёт, Техникаи асептикӣ ҳангоми ворид кардан, Бартарафкунӣ дар ҳолати гумонбар ба сироят **Хатҳои марказӣ** - Асептикаи ҷарроҳӣ барои воридсозӣ, Маҳдудияти ивазкунии бинтҳо, Катетерҳои кӯтоҳмуддати антибиотикӣ	- Кремҳои зиддимикробӣ барои тайёр кардани пӯст

20

10. Истифодаи антибиотикҳо ва устувории онҳо бар зидди микробҳо

1

Истифодаи дурусти антибиотикҳо

Барномаи истифодабарии антибиотикҳо

- Дар асоси ташхиси клиникӣ ва микробҳои сирояткунандаи тасдиқшуда ё симптоматикӣ
- Намунаҳои мувофиқ барои ташхиси бактериологӣ
- Интихоби антибиотик хусусияти беморӣ ва агенти патогенӣ,хусуссияти ҳассосият, таҳаммулпазирии бемор, харочот
- Табиб бояд аз паҳншавии муқовимат дар муассиса огоҳ бошад.

2

Истифодаи дурусти антибиотикҳо

Барномаи истифодабарии антибиотикҳо (Давомаш)

- То ҳадди имкон намудҳои ками доруворӣ
- Ба қадри имкон, аз омезиши антибиотикҳо худдорӣ кунед.
- Антибиотикҳои интихобшуда
- Вояи (доза) дуруст на хеле кам ва на аз ҳад зиёд
- Асосан, мӯҳлати истеъмоли антибиотикҳо 5-14 рӯзро ташкил медиҳад.

3

Табобат

Табобати антибиотикӣ аз инҳо иборатанд:

Доруворирo интихобӣ интихоб кунед, яъне ҳамоне бошад, ки камтар таъсири манфӣ расонад, ё устувор бошад.

- Табобати эмперикии антибиотикӣ
- Пеш аз табобат, намунаҳои мувофиқ аз руи ранги Грам, кишт ва санҷишҳо барои ҳассосият дида мешавад
- Омезиши антибиотик бояд интихобан ва танҳо барои нишондодҳои муайян истифода шаванд

4

Профилактикаи химиявӣ

Профилактикаи антибиотикӣ, танҳо барои манфиатҳое, ки аз хатар зиёдтаранд, истифода бурда мешаванд

Ба баъзе нишонаҳои умумӣ инҳо дохил мешаванд:

- профилактикаи интихобшудаи ҷарроҳӣ
- пешгирии эндокардит

Профилактикаи антибиотикӣ тачрибаи хуби ҷарроҳии асептикиро иваз намекунад

5

Муқовимати антибиотикҳо

Роҳҳои назорати сироят барои пешгирии ҳуруҷи микробҳои ба антибиотикҳо тобовар

Муайян кардани манбаҳо
- беморони мутеъ (колонизированный организм) ва сироятёфта
- ифлосшавии муҳити зист

Пешгирии гузариш
- Беҳтар намудани шустушӯи даст ва асептика
- Ҷудо намудани беморони мутеъшуда ва сироятёфта
- Бартараф кардани ҳама гуна манбаи умумӣ; дизинфектсияи муҳити атроф
- Беморони гурӯҳи хатарро аз дигар беморони сироятёфта ва мутеъшуда ҷудо кардан
- Бастани шӯъба барои қабули ҳолатҳои нав, дар ҳолати зарурӣ

Тағири хавф ба бемор
- Ҳангоми вақти зарурӣ, омилҳои хавфоваро қатъ кунед
- Назорати истифодаи антибиотик (гардиш, маҳдудият ё қатъкунӣ)

6

Муқовимати антибиотикҳо

Назорати муқовимати антибиотикҳои эндемикӣ

- Таъмини истифодаи дурусти антибиотикҳо
- Протоколи муассиса (дастурҳо)
- Такмили практикаи таъиноти дорухат барои антибиотикҳо
- Маҳдуд кардани истифодаи антибиотикҳои рӯзмарра

7

Стафилакокки тиллоранг ба метисиллин тобовар (СТМТ)

- Сирояти дохилибеморхонавӣ дар муассисаи махсус
- Ба ин монанд сирояти штаммҳои ҳассоси Стафилакокки тиллоранг

https://www.lshtm.ac.uk/newsevents/news/2018/routine-genomic-surveillance-mrsa-can-detect-unsuspected-outbreaks

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Стафилакокки тиллоранг ба метисиллин тобовар (СТМТ)

Омилҳои хавф барои рушди СТМТ дар беморон

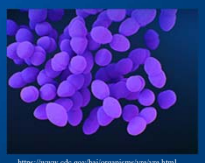
- Ҷойҳои имконпазири мутеъшуда ё сироят
- Бистарии дарозмуддат дар беморхона
- Беморони калонсол
- Беморони дар шӯъбаҳои махсус
- Интиқоли зуд-зуди беморон ва кормандон
- Истеъмоли аз ҳад зиёди антибиотикҳо дар шӯъба
- Зиёдшавии беморон
- Норасоии кадрҳо
- Иншооти нокифоя барои шустани дастон ва изолатсияи дахлдори беморон

9

Энтерококкҳои ба ванкомицин тобовар (ЭВТ)

Баъзе энтерококкҳо ба ҳама антибиотикҳо, аз ҷумла ванкомицин, тобоваранд.

Энтерококкҳои ба ванкомицин тобовар: ЭВТ



https://www.cdc.gov/hai/organisms/vre/vre.html

10

Энтерококкҳои ба ванкомицин тобовар (ЭВТ)

Омилҳои хавф барои рушди ЭВТ дар беморон

- Истифодаи қаблии курсҳои зиёди антибиотикҳо
- Фишори колонизатсиявӣ
- Таъсир ба дигар беморони мутеъшуда ё сироятёфта, ба ашёҳо, таҷҳизот ва сатҳи болоии муҳити атрофи олудашуда бо ЭВТ
- Мавҷудияти дастгоҳи инвазивӣ
- Захмҳои музмини пӯст
- Ҷиддияти беморӣ
- Қабул ба шӯъбаи эҳёгарӣ
- Будубоши дарозмуддат дар муассисаи тиббие, ки ЭВТ онҷо эндемикӣ аст

11

Бактерияҳои грам-манфии ба бисёр дору тобовар (ГМБДТ)

Бактерияҳои ГМБДТ

1. Энтеробактерияҳои истеҳсоли БЛСВ (бета-лактамазаҳои спектри васеъ)
2. Энтеробактерияҳои ба карбапенем тобовар (ЭКТ)
3. Бактерияҳои ғайри-ферментативии грам-манфӣ навъи Ацинобактерия
   Pseudomonas aeruginosa (Чубчахои фасодии кабуд)
   Stenotrophomonas maltophilia (неферментирующая палочка)

https://www.cdc.gov/hai/organisms/organisms.html

12

Сиёсати назорати антибиотик

Гурӯҳбандии агентҳои зидди микроб

- Бемаҳдуд (неограниченные)
- маҳдуд ё маҳфуз аст (ограниченные или зарезервированные)
- хориҷ карда шуда (исключенные или запрещенные)

13

Назорати истифодаи антибиотикҳо

Истифодаи антибиотикҳо дар муассиса:

- Аз тарафи шӯъбаи фармасефтӣ: шумораи дорувориҳо дар давраи муайян, самти мушаххаси табобати бемор, назорат карда мешавад
- Аудитҳои истифодаи антибиотикҳо
- Дастур оид ба истифодабарии антибиотикҳо

14

11. Пешгирии сироятёбии кормандон (бехатарии касбӣ)

1

Маълумот дар бораи кормандон ва иммунизатсия

Маълумот дар бораи корманд ҳангоми қабул ба кор
- Таърихи ваксинатсия
- Ҳолатҳои қаблии сироят бо бемориҳои сирояти

Иммунизатсияи тавсияшаванда
- Гепатити B, сурхакон, сурхча, кузоз, гулӯзиндонак
- Зуком: ҳар сол (вобаста ба дастраси)

2

Ҳама гуна тамоси касбӣ бо микроорганизмҳои тавассути хун гузаранда
- Машварат
- Назорати клиникӣ ва серологии дахлдор

3

Вируси норасоии масунияти одам (ВНМО)

Паст кардани хавфи таъсири ҳамаи микроорганизмҳои тавассути хун гузаранда
- То ҳадди имкон риояи чораҳои пешгирии стандартӣ бо монеаҳои иловагии муҳофизатӣ
- Дастгоҳҳои бехатарӣ ва системаи нест кардани сӯзанҳо
- Сӯзанро ба сӯзандорӯ маҳкам накардан
- Омӯзиш барои кормандони тиб оид ба амалияи кор бо асбобҳои нӯгтез

Техникаи корбарии як даста
https://youtu.be/AYUbpBLccTg

4

Вируси норасоии масунияти одам (ВНМО)

Омилҳои марбут ба сироятёбӣ бо ВНМО дар ҷойи кор
- Осеби чуқур (дохили мушакҳо)
- Хуни намоён дар дастгоҳи осебдода
- Дастгоҳи зарардода, ки дар ворид шудан ба раги хун сабаб мешавад
- Беморе, ки манбаи вирус аст
- Сӯрохии ковоки сӯзан

5

Вируси норасоии масунияти одам (ВНМО)

Роҳҳои пешгири баъд аз маълум кардани тамос бо сироят
- Оғоз дар муддати чор соат
- Зидовудин (АЗТ), Ламивудин (3ТС) ва Индинавир
- Намунаи хун барои ташхиси ВНМО
- Пайгирии табобат то як сол.

6

Вируси Гепатити В

- Осеби шадид
- HBsAg (потдани (антитела) сатҳии гепатити вирусии В) ё HBeAg (подтани капсулавии гепатити В) дар шахси мусбӣ аст
- Нагирифтан ва ё иммунизатсияи нотамоми кормандон

Профилактикаи баъд аз маълум кардани сироят

- Иммуноглобулини гепатити В (агар дастрас бошад)
- Даври пурраи ваксинатсия зидди гепатити В

7

Вируси Гепатити С

- Осеб аз ашёҳои нӯгашон тез

шахси сироятёфта бояд барои сирояти ВГС озмоиш карда шавад

Баъди маълум кардани сироят, чорахои пешгири лозим нест

8

Менингококк

- Тариқи ихроҷҳои роҳҳои нафас интиқол меёбад
- Кам вомехӯрад, вале хеле шадид аст
- Химиопрофилактикаи зарурӣ дар ҳолати тамоси наздик

9

Микобактерияи сил

- Бо роҳи қатравию - ҳавогӣ интиқол дода мешавад
- Пешгирӣ ба воситаи Изониазид

10

Дигар сироятҳо

- Обакон (Ветрянка)
- Зуком (Грипп)
- Кабудсулфа (Коклюш)
- Гулузиндонак (Дифтерия)
- Бемории хорӣ (Бешенство)
- Табби хунин (вобаста ба озмоишгох) (геморрагическая лихорадка)

11