Checklist for the Prevention and Control of Hospital-Associated Infection of Novel Coronavirus (COVID-19) at Medical Facilities

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This checklist was prepared primarily by the personnel of the Infectious Disease Surveillance Center of the National Institute of Infectious Diseases, trainees of the Field Epidemiology Training Program (FETP) of the same institute, persons who have completed the FETP, and collaborators, as the COVID-19 Cluster Response Team of the Ministry of Health, Labour and Welfare, based on the experience gained by providing support to the local authorities (public health center) that respond to the occurrence of COVID-19 at medical facilities, for use as a reference to assist with responses and support by local authorities (public health center) for outbreaks of hospital-associated infection at medical facilities.

Each medical facility will play a central role in taking measures in cooperation with the local authorities (public health center) to respond to the occurrence of COVID-19. However, many medical facilities don't have healthcare professionals specialized in infection control, and may not be able to take adequate measures in case of hospital-associated infection themselves, as many concurrent tasks are required, including epidemiological investigations and the maintenance of medical care/service, in addition to measures to prevent spread of the infection (reference figure). Accordingly, it is important for local authorities (public health center) to maintain close communication with medical facilities to assess their ability to respond adequately to any cases of hospital-associated infection, and to provide support, as necessary.

When this center dispatches a team to a local authority to provide support to responding to hospital-associated infection of COVID-19 at medical facilities, the team comprises specialists with experience in the following three fields: (1) epidemiological investigations, (2) infection prevention control (IPC) measures (= infection control/measures to prevent the spread of the infection), and (3) securement of logistics (= maintenance of medical care/service). For (1) and (2), we consider it necessary for both parties to cooperate closely to discuss how to improve infection prevention control based on information on the infection source and transmission route obtained by epidemiological investigations in (1), and to set a course for their implementation to resolve the cases. For (2) and (3), it is necessary to take actions aimed at the long term in many cases, and it is desirable to secure human resources locally, as far as possible (a "rapid response team" recruited by this center may take prompt actions if human resources cannot be secured locally during emergencies). For instance, infection control specialists in local regions include the infection control teams (ICT) at premium 1 core medical institutions, and the group of specialists that are crucial in coordinating hospital transfer and the medical service delivery system in local regions includes local Disaster Medical Assistance Teams (DMAT). The coordination functions of the local authorities are very important for utilizing specialists with various backgrounds, and we hope that the above description will be referred to, when taking actions.

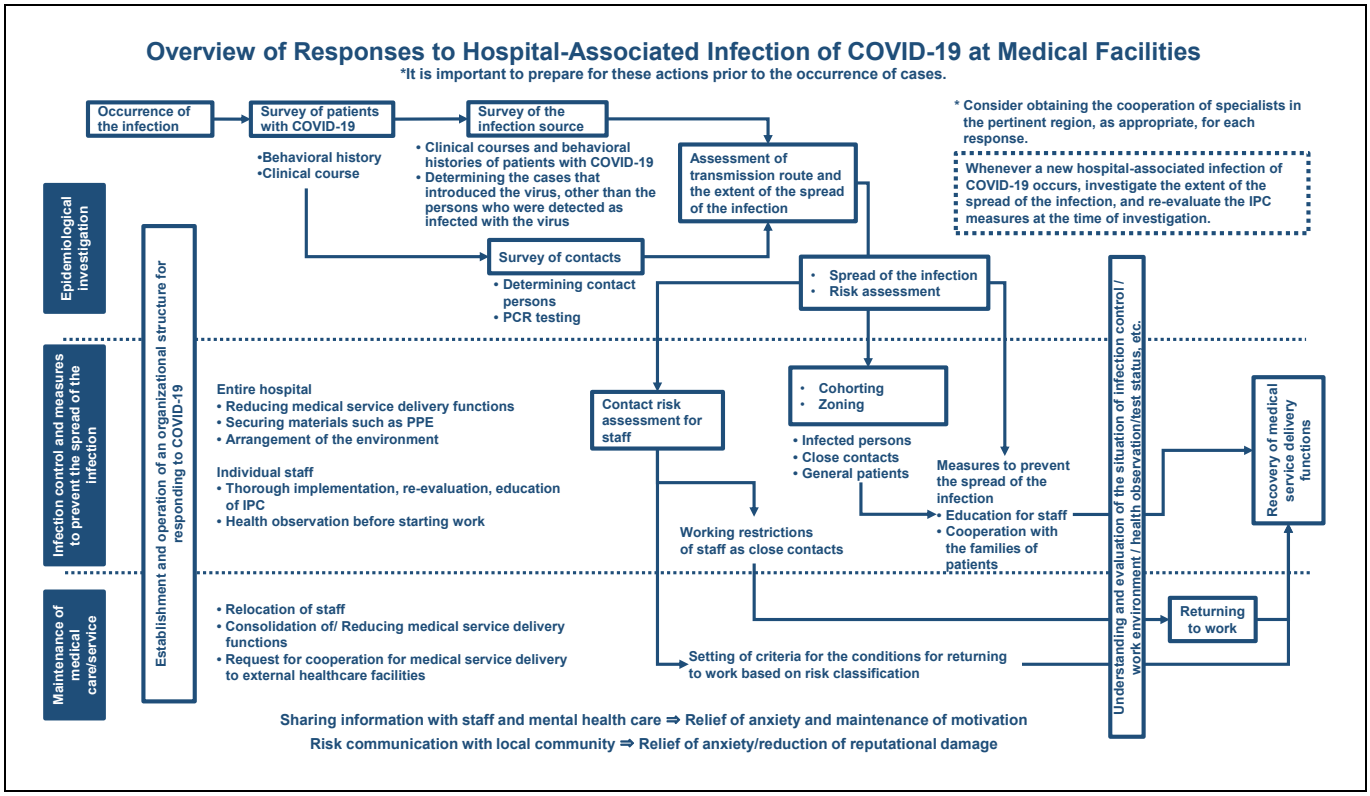
The items in this checklist represent issues observed by the Cluster Response Team while

* This English version of the Japanese checklist is provided for reference purposes of JICA COVID-19 Webinar Series. It will be published after the approval of the National Institute of Infectious Diseases. In the event of any inconsistency between the Japanese original and the English translation, the former shall prevail.

supporting the outbreak response at various medical facilities, and it is not intended that all items should be implemented at all medical facilities. Please use this list as a reference to understand the preparation, response and support status, based on the current situation including the presented points at medical facilities. This checklist was prepared under the premise that the local authorities (public health center) will check the state of actions taken by medical facilities. However, we hope that it will also actively be used when medical facilities evaluate their own responses.

Regarding the actions to be taken during a COVID-19 outbreak at medical facilities, also refer to "Regarding the Development of a System to Handle Novel Coronavirus Outbreaks at Medical Institutions, and the Initial Response in the Event of such an Outbreak (Advice)" (https://www.mhlw.go.jp/content/000627464.pdf) for measures against Novel Coronavirus-related Outbreaks by the Contact Tracing Team of the Cluster Response Team, the Ministry of Health, Labour and Welfare.

[Reference figure]



[Preparation period]

In preparation for the occurrence of hospital-associated infection of COVID-19 at medical facilities, the local authorities (public health center) should check the following points regarding actions taken at medical facilities under their jurisdiction in line with regular on-site inspections conducted according to the Medical Care Act. It is also advisable to actively provide advice regarding the necessary points to each facility. Given that many tasks should be performed after a case of infection has occurred (e.g., survey of contacts), it is important to understand the infection prevention and control (IPC) status of each facility, in advance.

Check item			Point
Management	Organizational structure	☐ A business continuity plan (BCP) is in place in case of the occurrence of COVID-19 at a facility and a local outbreak.	It is advisable to consider how to reduce or continue outpatient visits and ward functions in accordance with infection cases and staff shortages, and to establish action plans to secure staff accommodation and in-hospital childcare during an emergency. It is advisable to set the BCP in reference to the guidelines for preparation of a treatment continuation plan in the event of a novel influenza outbreak.
		☐ The infection control team and chain of command are clearly stated in writing.	A team centered on Infection Control Team that includes back-up office staff (infection control, data management, etc. in addition to medical practice) has been established to create a facility-wide support system.
		☐ Manuals for hospital-associated infection response have been prepared and updated.	In addition to manuals for regular infection control, a communication system when suspected patients are identified, and measures to prevent the spread of the infection (e.g., method for consultations with patients, zoning, cohorting, application of PPE, actions regarding close contacts), work restrictions for staff members and criteria for returning to work should also be described.
		☐ Methods for sharing information have been established and notified.	A system has been established to ensure decisions by the infection control team and management are reliably communicated to the medical front.
		☐ A patient consultation counter has been established, and a consultation response manual has been prepared.	The policy regarding the preparation of explanatory documents for patients and their families (and in some cases, the media), and the disclosure of information to external parties has been determined.
		☐ An environment where staff can easily request consultations has been established.	Contact points and systems have been established to respond to complaints of mental and physical disorders, and anxieties regarding social life.
	Staff management	☐ A list of staff members has been prepared.	The list should include part-time employees and contractors. Information including the age, gender, and work department of concerned individuals have been digitized.
		☐ A system for adjusting to absences from work due to poor physical condition has been established.	A system including the recruitment and relocation of personnel has been established.
		☐ The situation regarding the concurrent holding of multiple jobs has been clarified.	This item is necessary to assess the possibility of introducing the virus from outside the facility or spreading it to outside the facility. It is important to obtain understanding of staff why the concurrent job situation contains essential information.

Epidemiological investigation	General	☐ The data management method is unified	Staff member and patient lists should be prepared to centralize the information on infected persons, close contacts, and testing. Information should not be scattered (see [Initial detection period] Epidemiological investigation, Appendix: How to compile epidemiological data).
		☐ A risk assessment system has been established.	Implement data management for risk assessment of the extent of the spread of infection, etc. based on the route of introduction from the source and the transmission route in the facility (see [Initial detection period] Epidemiological investigation /data management).
Infection control	Education	☐ General education regarding COVID-19 has been provided to staff at the medical facility.	Such education should be provided not only to healthcare workers, but also to administrative personnel and outsourcing contractors. Basic knowledge regarding the mode of infection, etc. is important for a correct understanding.
		☐ Education regarding infection control has been provided to the staff at the medical facility.	Same as above. It is important to provide basic knowledge and practical training of standard precautions.
	Early detection	☐ A syndromic surveillance system of febrile diseases among staff members (health management) has been established.	Implement and record health management of the staff throughout the facility. Establish a system to detect and report the accumulation of abnormalities (e.g., fever). It is important to establish an environment where staff can take days off even if their symptoms are mild, and to ensure working status awareness (avoid vacancies, especially with regard to part-time doctors, etc.).
		☐ A syndromic surveillance system of febrile diseases among inpatients has been established.	. A syndromic surveillance is being conducted for early detection of hospital-associated COVID-19 infection among inpatients considering their primary diseases etc.
	Reduction of the risk of transmission of infection	☐ Safe backyard facility usage has been considered and adapted to ensure that staff members will not experience crowded and close-contact conditions in locker rooms, cafeterias, or lounges, etc.	To prevent transmission among staff members, grasp the working conditions of staff members concerning close contacts, and take measures to mitigate the risk (e.g., lounges, waiting rooms, and during meals).
		☐ The staff refrain from behavior that increases the risk of infection outside of the hospital.	The administrator, etc. provides information and calls attention to behavior outside the facility that should be avoided by staff to prevent spread of the infection.
		☐ The method for managing suspected COVID-19 patients has been determined.	Basic measures to prevent spread of the infection are being taken, not only for outpatients, but also for inpatients in case infection is suspected during hospitalization.
		☐ Measures to avoid closed, crowded, and close-contact situations in patient areas have been examined and introduced.	Measures to avoid closed, crowded, and close-contact situations are being taken in outpatient waiting rooms and examination departments.
		☐ Appropriate arrangement of the environment has been implemented.	To prevent transmission via articles for use, wards are organized and touched surfaces are frequently wiped and disinfected.

Infection control	Reduction of the risk of transmission of infection	☐ The handling of used linens, instruments, and dishes has been specified.	In principle, articles used by infected persons are treated as infectious (also follow this handing procedure for close contacts). Refer to the Guide for Novel Coronavirus Infection in Medical Facilities, Third Revised Edition, by the Japanese Society for Infection Prevention and Control. The operational procedures involving collection companies should also be determined in advance.
		☐ Handling of the bodies of patients who died of COVID-19 has been determined.	Standardize the operating procedures of handling the bodies of patients who died with a confirmed or suspected of COVID-19 infection at the facility, and share the actions and common understandings with contractors.
		☐ Restrictions on visits/control of persons visiting the facility are implemented.	Not only the families of patients but also external contractors who enter and exit are known.
	Material procurement	☐ The inventory of personal protective equipment (PPE) and hand hygiene goods is checked.	Check the stockpile under normal conditions to prepare for the occurrence of an outbreak.
		☐ The implementation status of N95 mask fit testing and the PPE attachment/detachment procedures have been confirmed.	Since there are many situations where staff members who do not normally handle infectious diseases are now forced to be involved, all staff of the entire facility should be able to take infection-preventing actions.
Collaboration	Government	☐ Facility staff members who respond to inquiries regarding the infection status should be confirmed.	Smooth and active communication under normal conditions is important.
		☐ The state of the epidemic in the local area and at other facilities is grasped.	Public health center should actively share information regarding the occurrence of COVID-19 in their regions with medical facilities under their jurisdiction.
		☐ The procedures to follow when detecting cases with suspected or confirmed, as well as subsequent procedures have been confirmed.	Share the administrative flow of the response to hospital-associated infection of COVID-19 (e.g., notification of occurrence, coordination of hospital beds, recommendation of hospitalization, and subsequent epidemiological investigation). Make adjustments, such as the method of summarizing data, etc. in advance to ensure prompt sharing of the required information by the local authorities (public health center) when an infected patient is detected (see [Initial detection] Epidemiological investigation /data management).
	Local regions	☐ The infection control network can be used.	It is important that any medical facility without Infectious Control Teams can also perform in-facility education by external infection control specialists and consultations as necessary (on-site support) utilizing infection control network (the government should also secure local specialists).
		☐ Other networks can also be used.	The local collaboration network among medical facilities to transfer/receive patients at times of reduced medical service delivery functions has also been established. When there is a shortage of staff members, it should be confirmed if staff support can be provided within corporate groups (if the local government has a support system, it should be considered to use it).
	Consignment	☐ The actions to be taken when hospital-associated infection of COVID-19 is detected should be confirmed by the concerned parties.	Confirm whether and to what extent business can be continued when a case of hospital-associated infection of COVID-19 is detected (discontinuation of business in response to the infection may increase the burden on the staff).

		☐ The work of outsourced staff members is managed.	Confirm whether there is an agreement that outsourced staff members may share the information if they are in a poor physical condition (COVID-19-like symptoms, such as fever), and consultations on the status of securing the necessary PPE.

[Initial detection period]

The key to the early detection of hospital-associated infection of COVID-19 patients is to determine whether the virus was brought into the facility by the patients themselves, or if it had entered the facility undetected and then spread within the facility prior to the hospitalization of the patients. It is also important to confirm whether operation of the facility and the continuation of measures are possible in case many COVID-19 patients are detected or there are many close contacts. It is desirable to confirm most details on the state of preparations at medical facilities prior to the outbreak of the infection (see [Preparation period]).

Check item			Point
Management	Organizational structure	☐ An infection control team has been organized.	A team has been established so that the supervisor and persons in charge can devote themselves to COVID-19-related tasks as necessary. In particular, support is provided to ensure easy implementation of ICT activities throughout the facility.
		☐ Infection control conferences and meetings have been held.	Special discussions are held on actions taken in the facility.
		☐ The communication route should be checked again.	The medical front is properly notified of the infection situation, details of discussions, and actions to be taken (this information is crucial to maintaining staff motivation).
		☐ Work arrangements are being adjusted.	A support system has been established, e.g., a backup system for close contacts whose work has been restricted.
		☐ Tasks in the entire medical facility with a risk of spreading the infection should be reduced.	Consider discontinuation/reduction of services that are performed across wards, such as rehabilitation, and reduce X-ray examinations, etc.
	Policy regarding risk assessment and testing	☐ Risk assessment of the entire facility has been conducted.	PCR tests are conducted according to risk assessment based on epidemiological investigation s (to be described later), and measures to prevent spreading of the infection (to be described later) are taken.
		☐ The policy on PCR screening tests has been discussed.	PCR tests are conducted based on assessment of the spread of infection (A broader group of people should be tested, not just close contacts, irrespective of the range of detected close contacts, in case the facility contamination or transmission route is unclear).
		☐ PCR tests have been performed and work restrictions imposed on close contacts.	PCR tests of close contacts should be performed, and quarantine and work restrictions should be implemented regardless of the test results. Regarding the timing of conducting tests and lifting work restrictions for staff members with negative test results, refer to the Guide for the Novel Coronavirus Infection in Medical Facilities, Third Edition, by the Japanese Society for Infection Prevention and Control.
	Others	☐ Explanations and responses to patients, their families, and the local community are provided.	Conduct in risk communication, both in- and outside the facility, as needed (the details should be discussed with the local authorities [public health center], in advance).
		☐ Staff members receive mental health care, and actions are taken to prevent reputational damage.	Re-dissemination of information regarding the consultation service, and cooperation with local authorities (public health center) are important.

Epidemiological investigation	Patients with COVID-19	☐ Behavioral history surveys and contact surveys are ongoing.	Confirm the behavioral history (determination of patient contacts). In principle, the disease is deemed infectious from 2 days prior to onset. In particular, carefully check for cross-ward behavior and contact persons who used shared spaces (e.g., rehabilitation facilities, operating rooms, and X-ray examinations) in the facility. At this time, it is important to determine if close contacts have been correctly identified based on the definition of close contacts and the risk classification*, regardless of the PCR test results. *Reference: Japanese Society for Infection Prevention and Control. Guide for the Novel Coronavirus Infection in Medical Facilities, Third Edition
		☐ A medical record survey (of inpatients) is performed.	Regarding the above-mentioned point, reconfirm that the onset of symptoms (date of onset) is. Also assess spread of the infection based on information regarding the ADL of infected patients and the received treatments.
	Close contacts	☐ Close contacts have been defined.	Define* close contacts (define duration/place/person) prior to the survey. *Reference: Infectious Disease Surveillance Center, National Institute of Infectious Diseases. Guidelines for Active Epidemiological Investigation in Patients with Novel Coronavirus Infection (Tentative version, dated May 29, 2020)
		☐ The risk classification of contacts is based on the definition of close contacts.	Based on the above-mentioned definition, classify the risk (from low to high)* of close contacts using direct interviews or a survey form, etc. (to be used as a reference later when determining the working conditions). *Reference: Japanese Society for Infection Prevention and Control. Guide for the Novel Coronavirus Infection in Medical Facilities, Third Edition
		☐ Quarantine of/work restrictions on close contacts have been set.	Based on the above risk classification, impose quarantine/work restrictions on those at risk, in principle. However, depending on the degree of risk, criteria may be set to lift or mitigate the work restrictions.
	Screening of contacts	☐ Contacts to undergo screening have been defined.	The behavioral history of a patient with COVID-19 may indicate the possibility someone else than the patient may enter the facility. In such a case, not only exposure of close contacts, but also possible previous hospital-associated transmission should be sufficiently considered, and PCR screening tests should be conducted widely to clarify the spread of hospital-associated infection. In this case, the definition of investigated subjects (contacts) should be determined (determine duration/place/persons widely in addition to close contacts). At this time, patients who had been discharged during the indicated period, contractors who visited the facility, and persons who visited the patient should not be overseen.
		☐ Persons to undergo screening have been listed.	A list of inpatients and staff members at the medical facility who undergo testing has been made.
		☐ The priority of the targets for screening has been determined.	Due to the capacity of the testing institution, screening tests should be conducted based on the priority of testing, according to such factors as the presence of symptoms.

Epidemiological investigation	Screening of contacts	☐ Communication with contacts is continued.	Even in case there are many subjects, promptly inform them and their families of the tests conducted and the results. Confirm whether the explanations have been unified (preparation of a template, etc.).
		☐ Sample collectors have been secured, and preventive measures against infection during sampling are thoroughly implemented.	During screening, it is important to collect samples using a set procedure, and to apply sufficient measures to prevent infection.
	Data management	☐ Data of patients with COVID-19 are managed.	A line list of patients with COVID-19 should be prepared keeping in mind that an epidemiological summary (to be described later) will be prepared at a later date, and to manage the data. Information will also be shared using summarized information such as figures and tables compiled at medical facilities and public health center. For reference, see description 1) below the table for the items in the line list.
		☐ Data regarding close contacts are being managed.	Determine the close contacts of each patient with COVID-19 in the initial stage. Afterwards, use a line list or chart (see the Appendix) to manage the status regarding testing and the patient contacts, and share the information with medical facilities and public health centers. (If the number of patients with COVID-19 increases and the situation becomes complex, a list of inpatients and a list of staff members may be used for management, as with the test status.) For reference, see description 2) below the table for the items in the line list.
		☐ Data regarding testing are managed.	If tests are conducted in all wards to clarify the spread of hospital-associated infections, use a line list to manage the test status based on the lists of inpatients and staff members (it is advisable to include all members). At that time, it is important to not only include persons who tested positive, but also those who tested negative or were not tested. It is also advisable to understand the situation (policy) of conducting tests. For reference, see description 3) below the table for the items in the line list.
	Summarizing data	☐ Data on hospital-associated infection of COVID-19 patients is visualized.	To clarify the extent of the spread of hospital-associated infection and perform risk assessment, it is important to visualize the data in the line list by “time/person/place,” as follows. ・ Creation of an epidemic curve (including information on the date of onset). ・ Preparation of a progress chart (Gantt chart) ・ Creation of a bed map (understanding the distribution of beds with hospital-associated infection) ・ Summary of patient demographics (characteristics such as affiliation [inpatient ward etc.], age, gender, and disease of each inpatient) ・ Creation of a link diagram Compiling such information is very important to facilitate common understanding by facilities and public health center, and also for risk assessment (see the Appendix for the compilation method).

Epidemiological investigation	Risk assessment	☐ The virus transmission route to the hospital has been estimated.	Estimate the route of virus transmission to the hospital, based on the results of a retrospective survey prior to the onset of the disease of detected and suspected COVID-19 patients (conduct a fever surveillance).
		☐ The extent of spread of hospital-associated infection has been estimated.	Estimate the extent of spread of hospital-associated infection based on the results of PCR testing and the range of detected close contacts. Each time a patient is detected, determine the persons who have been in contact with the patient, and update the estimated extent of the spread of infection.
		☐ The transmission risk has been assessed.	Assess the transmission route based on the behavioral history and the contact history of the patients, etc. Include all possible risks, e.g., direct contact, articles that were used in procedures performed by staff, and environmental transmission, and reflect them in the measures.
	Options	☐ In case the transmission route of the virus to the facility is unclear, consider if there is a person who may have served as a route of entry.	If the route whereby the virus was introduced to the facility is unknown, check if there is a person who may have introduced it based on interviews about risk-taking behavior and symptom surveillance data (health observation) of fever, irrespective of test results. Check the dates of hospitalization, fever types, and symptoms on the medical charts of inpatients, and search a possible undetected route of entry for the virus. This data can be used to investigate the time when the infection may have been introduced.
Infection control	Actions for patients with COVID-19/close contacts	☐ Quarantine/cohorting of COVID-19 patients and their close contacts	Perform quarantine/cohorting of patients and their close contacts separate from other inpatients, respectively. However, it is important to remain sufficiently informed regarding the risk of ward transfer. (Actions should be taken under the assumption that the disease may develop, especially in close contacts, even in case of a single negative PCR test.)
		☐ The setting of zoning is clearly indicated.	Perform zoning so that staff members who care for inpatients will not intersect. It is important to clearly show the state of zoning at the site.
		☐ The area for wearing PPE is appropriately set, and the equipment is placed in appropriate locations.	Check whether the wearing of appropriate PPE is set, PPE is provided, and the method of use is clearly indicated (many staff members are not familiar with PPE), according to the set zoning and the required procedures (especially if there is a risk of generating a risk). It should be noted that wearing unnecessary and excessive PPE for fear of infection may accelerate its transmission. Determine a PPE reuse policy.
		☐ Dedicated staff members work exclusively with the infection.	The assignment of dedicated staff members is desirable to respond to the disease to reduce further spread of infection. In particular, note that there are fewer staff members on night shifts.
		☐ Dedicated articles are used exclusively for the disease.	Perform dedicated cohorting of shared locations such as restrooms, and use them in an exclusive manner to handle the infection.
		☐ Issues found after measures have started are identified and improved.	In fact, many issues arise after infection control has started. It is important to reliably evaluate the situation and improve the measures as appropriate.

Infection control	Early detection	☐ Syndromic Surveillance of febrile diseases (health management) in staff members and inpatients has been conducted.	For staff members and inpatients who are not close contacts, it is necessary to continue health observation and conduct PCR tests as appropriate for early detection of the spread of infection and new cases of introduction of the virus Confirm continuously that measures such as quarantine are taken at the stage of suspected infection.
	Measures for individual staff members/the entire hospital	☐ Standard contact/droplet infection preventive measures are thoroughly implemented.	Determine the scope of each preventive measure, and implement each according to the zoning, etc. In some wards, communication between staff members may be particularly difficult because operations are performed by help staff due to work restrictions. Attention should be paid accordingly to such situations.
		☐ The implementation and timing of hand hygiene have been thoroughly established.	Once again disseminate information, confirm, and thoroughly implement hand hygiene measures comprehensively.
		☐ Alcohol disinfectant is placed, as appropriate.	Reconfirm the location. Pay particular attention to areas staff use in common. Place disinfectant at the entrance for the staff to use before and after using lockers, cafeterias, etc. to prevent the virus from entering. (Ensure thorough implementation both on entering and leaving the workplace.)
		☐ The implementation status of each treatment/procedure is checked.	Confirm the implementation status, as appropriate, by ICT, etc., and present the methods of actions that may represent risks, in an easy-to-understand manner.
		☐ Guidance on measures against infection is offered to patients and their cooperation is requested.	Request cooperation with the wearing of a mask (during treatment, care, and when going outside the room), frequent hand hygiene, and staying in the room as far as possible (avoiding contact with other patients).
		☐ Staff are available to guide, maintain, and improve infection control.	There are many facilities that do not have staff members specialized in infection control, and it is necessary to determine the kind of support needed (long-term support, or support on an as-needed basis, only) to maintain and improve sufficient infection control. Also provide support for cooperation with infection control specialists, as requested, in regions where it is possible.
		☐ The required amount of materials, such as PPE is grasped.	Estimate when the amount of materials may be exhausted in the future based on the daily usage of materials, and replenish them.
Collaboration	Government	☐ Information is shared, and the policy regarding responses has been confirmed.	Confirm these points again (see [Before the occurrence of an outbreak]).
		☐ Coordination with other hospitals when COVID-19 patients are transferred has been confirmed.	Discuss whether patients should be managed at the facility or transferred to another facility based on the situation at the facility and the patient. Take priority in view of severity, etc. into consideration when transferring a patient to another facility.
	Local regions	☐ A system to obtain cooperation from the local network has been established.	Reconfirm whether cooperation of the local network to accept transfer of patients, etc. can be requested, in the case operations are reduced.
	Consignment	☐ Consignment contractors should be requested to respond to the detection of a patient with COVID-19 in the hospital.	For tasks that can be continued, share the scope of feasible tasks and the points of note when performing these tasks, and request their implementation.

Items that should at least be included in the line list.

1) For inpatients: ID, age, gender, name, inpatient ward, department, diagnosis at hospitalization, date of hospitalization, date of onset, date of confirmed diagnosis of test, date of starting quarantine, treatment and other infection risks, etc.
   For staff members: ID, age, gender, name, job type, department where the staff member is working, date of onset, date of confirmed diagnosis based on test, and date of starting quarantine, etc.
   (It will be easier to summarize these items later if managed in a data sheet.)
2) For inpatients: ID, age, gender, name, inpatient ward, department, diagnosis at hospitalization, infected persons with whom the patient was in contact, last date of contact, contact situation, and risk of contact*, etc.
   For staff members: ID, age, gender, name, job type, department where the staff member is working, infected persons with whom the staff member was in contact, last date of contact, contact situation, and risk of contact*, etc. (*Refer to the Japanese Society for Infection Prevention and Control: Guide for the Novel Coronavirus Infection in Medical Facilities [Third Edition])
3) For inpatients: ID, age, gender, name, inpatient ward, department, diagnosis on hospitalization, date when the test result was obtained, test result, and reason for test, etc.
   For staff members: ID, age, gender, name, job type, department where the staff member is working, date when the test result was obtained, test result, and reason for test, etc.
   (List only basic information for those who have not undergone testing ← This information is necessary to evaluate the test status and the positive rate.)

[Spreading period]

It is desirable to confirm that most are ready at the time of preparation or initial detection (see [Preparation period] [Initial detection period]).

Check item			Point
Management	Organizational structure	☐ The medical service delivery system is modified based on risk assessment and the BCP.	Due to the characteristics of medical facilities, it is necessary to continue tasks that must continue. Medical service delivery functions may be considerably reduced under uncertain situations in the initial phase. Assess the risk and resume tasks, step by step, as the extent of spreading of the infection is determined. (As staff members return to work, it will also have an effect.)
		☐ Regular infection control conferences and meetings are held.	Share information so that not only the daily situation, but also the overall situation is understood, as appropriate, twice daily in the morning and evening (depending on the situation).
		☐ Information is disclosed outside the hospital at appropriate times.	Publicize patient detection, test conduct, and survey status at appropriate timing (consult with the local authorities [public health center]).
		☐ Information is reliably shared among all staff members.	Share information, as appropriate, to relieve the anxiety of the staff, and maintain staff motivation (also using figures and tables). Examples: What is happening now (what kinds of infected persons have been detected, and in which wards?) What measures are being taken now? For how long should the staff respond to this situation? (e.g., lifting of work restrictions on staff members, end of quarantine of close contacts, sharing of rough standards to resume the medical service delivery functions), etc.
		☐ In the current situation, staff should focus on tasks that are essential to control COVID-19.	Provide support so that the staff can continue to focus on jobs involving priority measures, such as data compilation and infection control.
	Others	☐ Responses are made in consideration of the anxiety of the families of patients.	Since visits are prohibited in most cases, it is necessary to provide information on the conditions of patients to their families as appropriate (e.g., explanation by the primary physician and visitation via a remote system).
		☐ Mental health care is provided to the staff, and actions are taken to prevent reputational damage.	Some staff members leave their jobs due to work or mental burden. It is important to re-disseminate information regarding the consultation service and provide support in cooperation with local authorities.
Epidemiological investigation		☐ Data management can be continued.	As the numbers of contacts and conducted tests increase, more time is often required to manage and organize the data. (Readjustment of the personnel in charge, etc. should be considered.)
		☐ Summary information is updated as appropriate.	For risk assessment, it is advisable to visualize the data as appropriate and to share it with facilities and public health center. Sharing of data summarized by local authorities (public health center) with medical facilities is often useful to build common knowledge.
		☐ Risk assessment is performed as appropriate.	Perform risk assessment at medical facilities as appropriate based on epidemiological information. If the scope of the spread of infection increases or the policy changes significantly due to risk assessment, share the information with local authorities (public health center) each time.

Infection control	Actions for patients with COVID-19/close contacts	☐ Measures to prevent spread of the infection based on risk assessment have been taken appropriately.	Improve situations that may pose a risk of spreading the infection, as identified in the risk assessment, as appropriate.
		☐ The implementation status of measures to prevent the spread of the infection is evaluated appropriately, and feedback is given to the medical front.	Since many staff members are not familiar with infection control, it is important to frequently check, evaluate, and improve the implementation status at the site. (Correct infection control can also reduce staff anxiety.)
		☐ There are sufficient materials such as PPE.	A lack of PPE can cause anxiety of staff. If it is difficult to secure these materials, consider obtaining support through local authorities, self-production, methods for reuse, etc.
Infection control	Early detection	☐ The onset of disease of staff members and inpatients who are not close contacts is detected early, and PCR tests are continually conducted as appropriate.	Continue monitoring to check for detection of patients beyond the estimated extent of spread of the infection, and whether a new source of infection has been introduced during the period of spread of the infection.
Collaboration	Government	☐ The situation in the facility is reported to the local authorities (public health center) as appropriate.	Check the situation in the facility through the concerned counter. As it may not be possible to grasp the full picture of the status of the infection response, it is important for the health center to actively visit and check the situation. It is also advisable to share the information summarized in figures and tables to gain common understanding of the spread of the infection.
	Local regions	☐ Consultation with the network for infection control is available as appropriate.	If the medical facility cannot actively consult a network, etc., consider support from the local authorities (public health center).
		☐ Other networks can be used.	If support for a facility with insufficient staff members is required, a request for support may be made to group facilities (or if there is a support system within the local government, it can be used). Coordination with medical facilities that can accept the transfer of general inpatients may also be necessary to reduce the burden on staff.

[Control period/re-preparation period]

Once the infection control system is established and the occurrence of new COVID-19 patients has subsided, discussions between medical institutions and local authorities (public health center) will shift to the phase of resuming operations. Regarding the resumption of operations at medical institutions, it is necessary to comprehensively judge the state of new cases of COVID-19 infection, the period of health observation of close contacts, the state of infection control and detection of patients in local regions, and the status of staff members who return to work, and it is important to understand and evaluate each of these situations. It is also important to review the overall picture of the situation in general to prepare for future outbreaks of the infection, and to reflect the obtained information in infection-preventive measures.

Check item			Point
Management	General	☐ Coordination to receive transferred patients, etc. has been performed.	Depending on the capacity and roles of the medical facility, patients whose condition had been severe and were transferred to another hospital may be re-accepted. Accept patients based on the status of staff members' return to work and the management of hospital beds.
		☐ The criteria for staff to return to work have been specified.	For staff members who have been infected, consider return to work based on the discharge criteria, etc. provided by the Ministry of Health, Labour and Welfare, in principle. Concerning staff members who had close contact with an infected person, judge whether they can return to work after a certain symptom-free period*. An additional health observation period may be set, or a test may be conducted immediately before returning to work at some facilities to reduce the risk of infection (take appropriate actions). However, since some cases of infection have been found after the end of the health observation period, it is important to take sufficient preventive measures to completely prevent the unlikely event that the infection may be spread by a staff member who has returned to work. *Reference: Japanese Society for Infection Prevention and Control. Guide for the Novel Coronavirus Infection in Medical Facilities, Third Edition Actions after exposure of healthcare workers
		☐ Re-education of staff members who return to work.	Since staff members who were prevented from working may not have received infection control education, it is important to provide the education again. The education is also necessary for staff members who are not used to infection control when they resume their tasks such as rehabilitation.
	Re-preparation	☐ The overall picture of hospital-associated infection is reviewed and knowledge is shared.	To resume normal services, all staff members must review the actual cases and share all obtained knowledge with concerned local external institutions to reflect the information in future local measures.
		☐ Manuals are revised and structure preparation is reviewed.	Through case studies, record the necessary measures in preparation for future outbreaks of infection, and prepare to apply these measures immediately.

Epidemiological investigation	General	☐ Continuation of data management.	Continue data management until a case is resolved.
		☐ Summary information is updated as appropriate.	Same as above
		☐ Risk assessment is performed as appropriate.	Same as above
		☐ An overall picture of the case is compiled.	Summarize the overall picture of the case for such purposes as future review.
Infection control	General	☐ Review of cohorting and zoning as needed.	Downscale or arrange cohorting and zoning when COVID-19 patients and close contacts decrease.
		☐ Discussion of the conditions for canceling quarantine (cohorting) of COVID-19 patients	Concerning COVID-19 patients, in-hospital quarantine will be cancelled and transfer (or discharge) from the facility will be implemented based on the criteria for discharge in the notification of the Ministry of Health, Labour and Welfare dated May 29. A test to confirm a negative result may be unnecessary depending on the conditions; however, some medical facilities may consider testing at the time of quarantine cancellation or hospital transfer as risk management. Discuss the necessity of testing, in consideration of the state of infection control and other factors.
		☐ Discussion of actions at the end of health observation of close contacts	Concerning persons who had close contact with a COVID-19 patient, health observation is completed when they have not shown any symptoms for 14 days since the last exposure to the patient. In principle, a test is unnecessary if infection control is sufficient. However, since the timing of exposure is unknown if infection control is insufficient, it may be considered to perform a test at the end of health observation. Consider the necessity of testing in view of the state of infection control, etc.
		☐ Updating of the PPE inventory	Secure PPE continuously for adequate implementation of infection control.
		☐ The implementation status of the infection control measures is evaluated and improved as appropriate.	Be aware of exhaustion among staff involved in long-term measures, and implement measures so that such staff members can perform daily tasks without an excessive burden.
	Early detection	☐ Onset of disease among staff members and inpatients who are not close contacts is detected early, and PCR tests are conducted as appropriate.	Continuous monitoring is necessary to check for the detection of patients outside the estimated extent of spread of the infection, and also whether the virus has been introduced during the control period.
Infection control	Re-preparation	☐ A system to detect infections early has been established assuming that the virus may be introduced in the future.	It is necessary to continue taking actions when COVID-19 is suspected in inpatients and staff members in all wards (e.g., measures against fever).
		☐ Actions are taken in consideration of the risk of spread of the infection in case the virus is newly introduced.	Continue measures to mitigate the risks of spreading that have been identified so far (e.g., standard precautions, thorough implementation of hand hygiene, wearing of a mask, avoiding the 3 Cs).
		☐ A program of continued staff education is provided.	It is important to incorporate the measures that are taken into daily practice.

Collaboration	Cooperation with the government	☐ Discussions regarding task resumption are held.	Since it is necessary to make judgments based on various situations such as implementation of the contents described in this checklist, tasks are often resumed in consultation with the local authorities (public health center) as appropriate.
		☐ The situation in the facility is reported to the local authorities (public health center) as appropriate.	Active information sharing is necessary, even when patients' condition has stabilized.
		☐ The state of the epidemic in the local area and at other facilities has been confirmed.	Local authorities (public health center) should actively share information on the local occurrence of COVID-19 with medical facilities.

Appendix

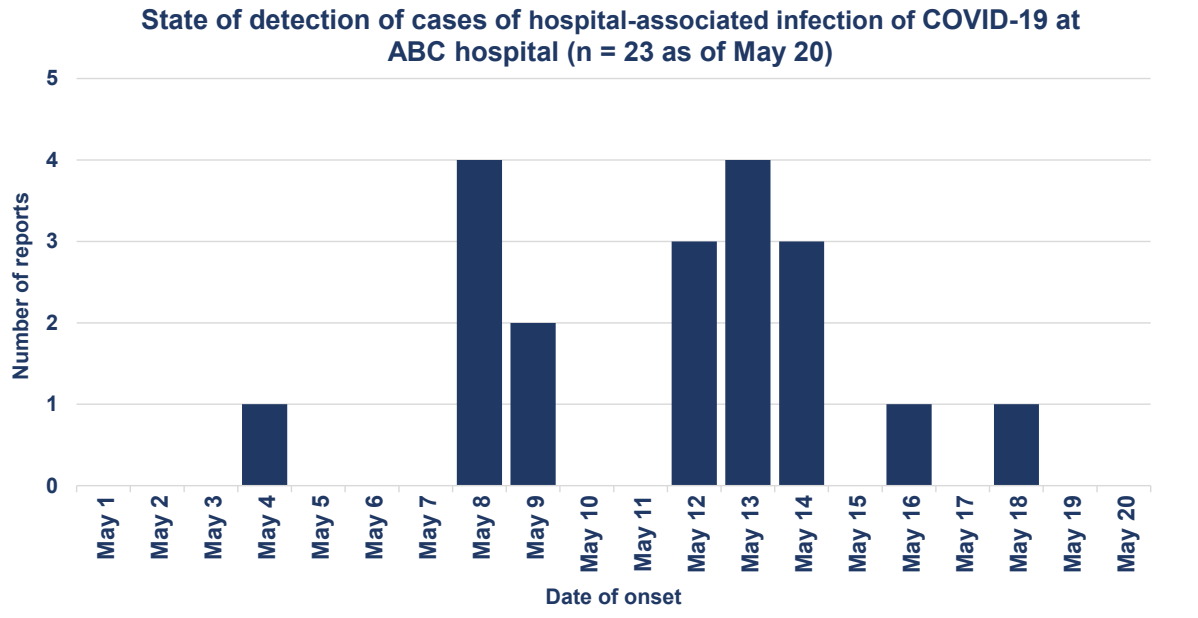
An example of the method of compiling epidemiological data (Point: It is important to visualize and summarize information regarding “time/place/person.”)

Example of a Line List of Patients of Hospital-Associated Infection of COVID-19 (Simplified Version)

No.	Occupation	Department in charge Hospital bed	Gender	Age	Name of disease for hospitalization	Date of hospitalization	Date of onset	Date of obtaining positive test result	Remarks
1	Pharmacist	1F Pharmacy	Female	35		-	March 30	April 1	
2	Occupational therapist	Rehabilitation room/ward	Female	25		-	March 31	April 2	
3	Nurse	3F East Ward	Female	35		-	April 2	April 3	
4	Inpatient	3F East 301	Male	78	Idiopathic osteonecrosis of the femoral head	January 31	Unknown	April 6	Intermittent fever since February
5	Orthopedist		Male	44		-	No symptoms	April 6	
6	Inpatient	3F East 302	Female	80	Intertrochanteric femoral fracture	March 18	April 1	April 6	Administration of an oral anti-inflammatory analgesic
7	Inpatient	3F East 302	Female	91	Patellar fracture	March 20	April 3	April 6	
8	Inpatient	3F East 301	Male	78	Femoral neck fracture	March 11	Unknown	April 6	Administration of an oral anti-inflammatory analgesic
9	Nursing assistant	3F	Female	48		-	Unknown	April 6	Lower back pain: Administration of an oral anti-inflammatory analgesic

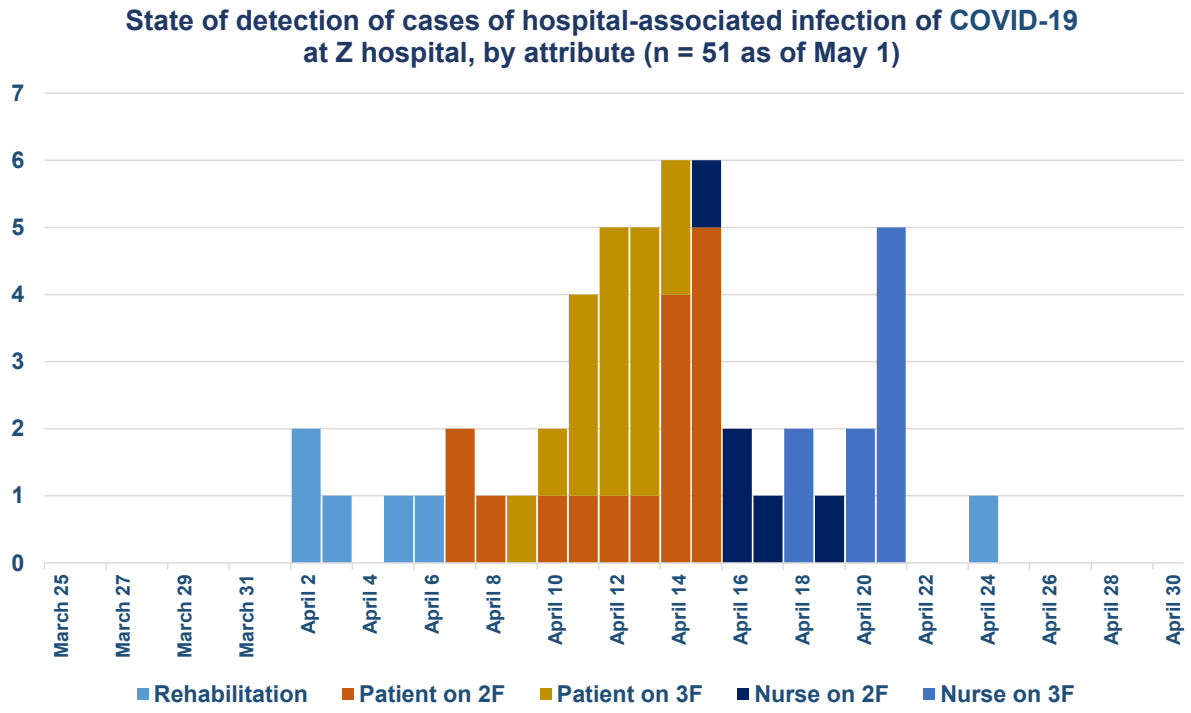
Prepare a line list focusing on the basic information of patients (Aggregate the information using a method that is easy to manage with EXCEL, etc. considering that the details will be analyzed later.)

Example of an Epidemic Curve (Example 1)



An epidemic curve captures the chronological characteristics of patient detection. It is important to draw epidemic curves by the date of onset, not the date of obtaining the test result.

Example of an Epidemic Curve (Example 2)



A graphical presentation by attribute may provide the characteristics of the transmission of the infection.

Example of the Method for Summarizing the Characteristics of Patients with Hospital-Associated Infection of COVID-19 (1)

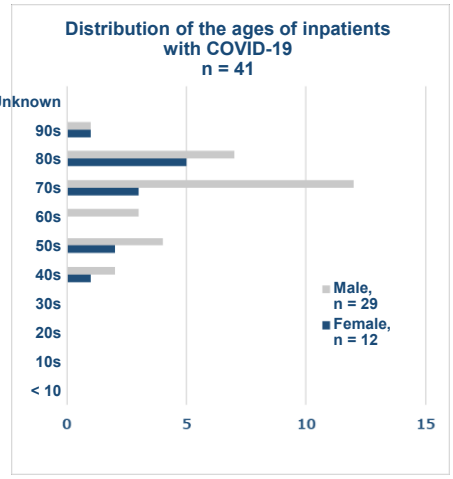
				Number of patients with COVID-19 n = 85	%
Attribute	Patients	Inpatient ward	2F	8	8.5
			3F	32	34.0
			4F	1	1.1
	(Subtotal)			41	43.6
	Staff	Nurse	2F	5	5.3
			3F	4	4.3
			4F	0	0.0
		(Subtotal)		9	9.6
		Doctors		0	0.0
		Physiotherapists (PT)		23	24.5
		Other medical staff		6	6.4
		Office clerks, etc.		1	1.1
		Consignment		2	2.1
	(Subtotal)			41	43.6
	Other than staff	Contractors entering and exiting the facility		3	3.2
		In-hospital nursery		0	0.0
	(Subtotal)			3	3.2
Total				85	
Symptoms	Symptomatic			69	81.2
	Asymptomatic carriers			2	2.4
	Unknown			14	16.5

Basic information is summarized to describe the characteristics of the patients.
***These characteristics may reflect the distribution of the population, and should be compared and interpreted (e.g., a comparison based on the implementation of testing, the number of staff with each affiliation, the number of inpatients by ward, etc.)**

Example of the Method for Summarizing the Characteristics of Patients with Hospital-Associated Infection of COVID-19 (2)

For inpatients

			Number of patients with COVID-19 among inpatients n = 41	%
Gender	Male		29	70.7
	Female		12	29.3
Age	Median	[Interquartile range]	75	[68-82]



		Number of patients with COVID-19 among inpatients n = 41	%
Outcome	Continued hospitalization	20	48.8
	Planned to be transferred to another hospital	4	9.8
	Transferred	17	41.5
Inpatient ward	2F	8	19.5
	3F	32	78.0
	4F	1	2.4
Department	Orthopedics	33	80.5
	Internal medicine	8	19.5
Treatments (including duplication)	Tracheal suction	2	4.9
	Rehabilitation	39	95.1
	Diaper	20	48.8
	Treatment of a pressure ulcer	3	7.3
ADL	Independent living	0	0.0
	Partial assistance	20	48.8
	Wheelchair	16	39.0
	Bedridden	5	12.2

Confirm whether there are any common items (including treatments and risk factors) which contribute to basic information and the transmission of the infection (it may be advisable to analyze by attribute, such as inpatients, staff, etc.). However, when assessing the risk, it is necessary to perform analyses using case-control studies, etc. (omitted).

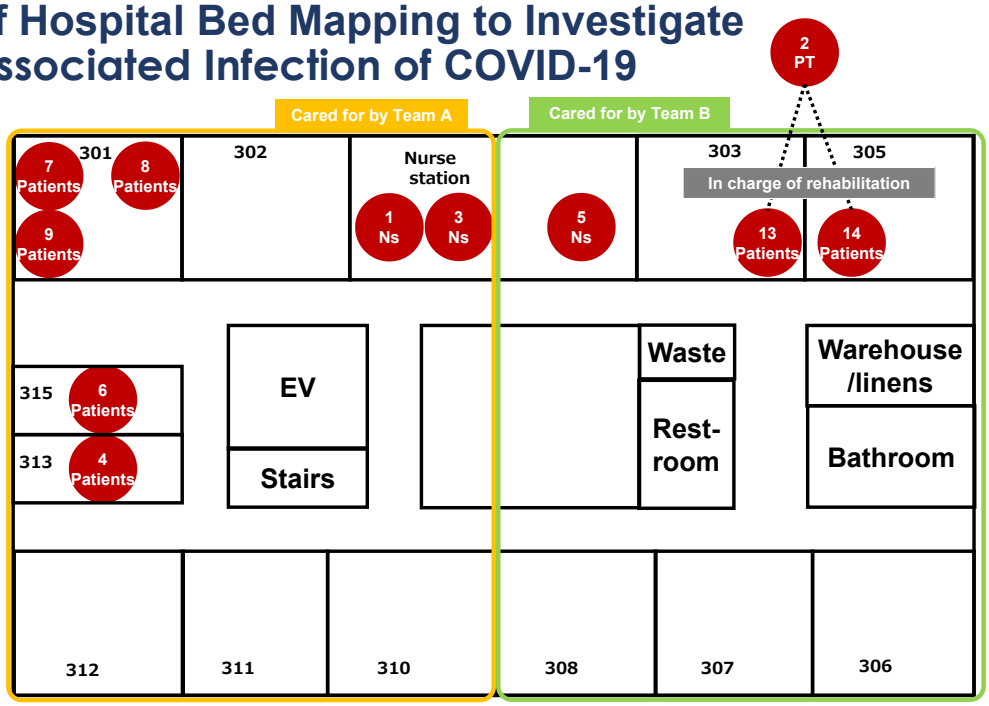
Example of the Method for Summarizing the Characteristics of Patients with Hospital-Associated Infection of COVID-19 (3)

PCR Positive rate and test status

				Number of patients with COVID-19 n = 85	Total number of tests n = 208	Positive rate %	Number of cases of hospitalization Number of staff	Rate of undergoing testing %
Attribute	Patients	Inpatient ward	2F	8	12	66.7	31	38.7
			3F	32	33	97.0	35	94.3
			4F	1	17	5.9	32	53.1
	(Subtotal)			41	62	66.1	98	63.3
	Staff	Nurse	2F	5	6	83.3	20	30.0
			3F	4	5	80.0	24	20.8
			4F	0	6	0.0	20	30.0
		(Subtotal)		9	18	50.0	65	27.7
		Doctors		0	7	0.0	9	77.8
		PT		23	42	54.8	62	67.7
		Other medical staff		6	17	35.3	35	48.6
		Office clerks, etc.		1	14	7.1	15	93.3
		Consignment		2	16	12.5	16	100.0
	(Subtotal)			41	114	36.0	202	56.4
Symptoms	Symptomatic			69	74	93.2	76	97.4
	Asymptomatic carriers			2	4	50.0	83	4.8
	Unknown			14	130	10.8	141	92.2
Total				85	208	40.9	300	69.3

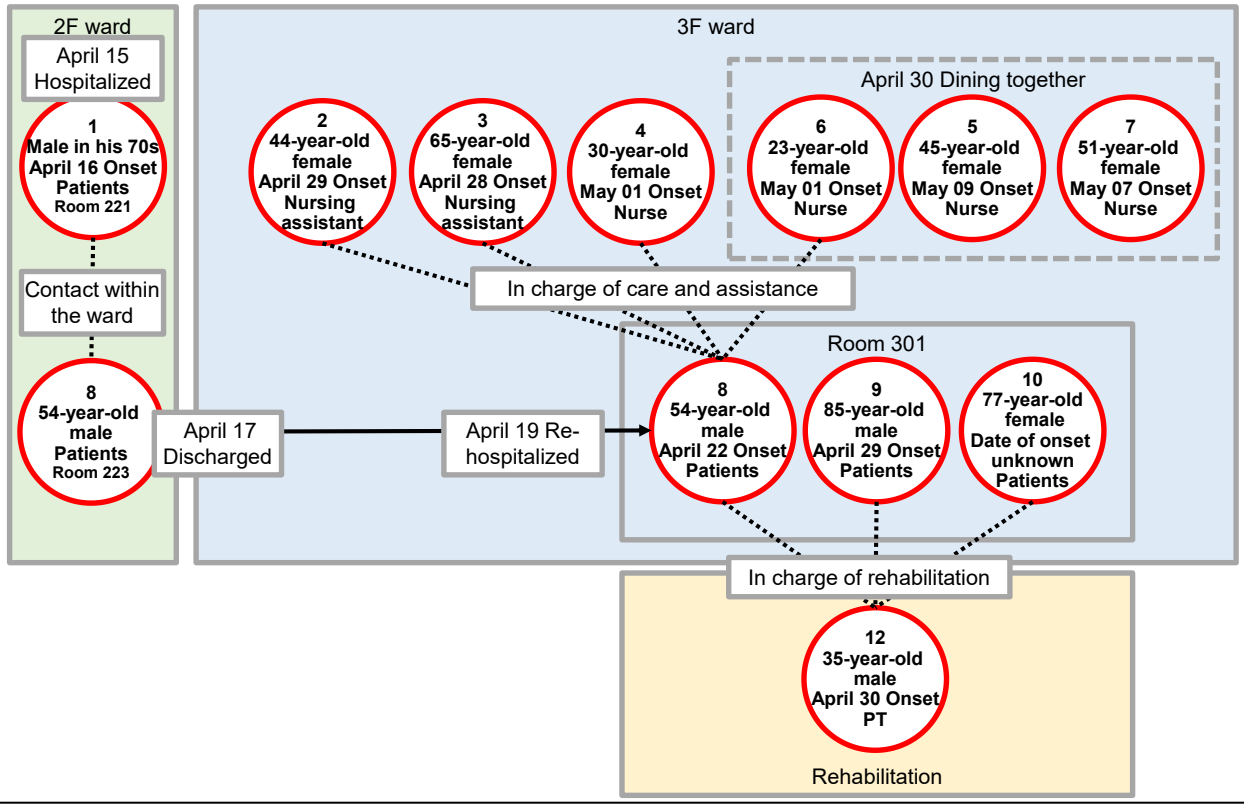
It is also important to summarize and compare information such as how many tests were conducted on what kind of population, and the number of positive individuals.

Example of Hospital Bed Mapping to Investigate Hospital-Associated Infection of COVID-19



Assess the infection status in wards and the risk of spread by mapping the beds used by patients with positive test results, and tracing contacts through care and medical practices performed by infected staff members.

Example of a Link Diagram



Example of a Chart of Clinical Course
Chart of Clinical Course of Patients with Hospital-Associated Infection of COVID-19 at ○× Hospital

Case	Attribute	Age	3/15	3/16	3/17	3/18	3/19	3/20	3/21	3/22	3/23	3/24	3/25	3/26	3/27	3/28	3/29	3/30	3/31	4/1	4/2	4/3	4/4	4/5	4/6	4/7	4/8	4/9	4/10	4/11
1	PT	34						At work	At work	At work	Absent	At work	At work	Absent	At work	At work	At work	Absent	Onset	Test		Definitive diagnosis	Recuper-ation at home							
2	PT	25						At work	At work	At work	Absent	At work	Absent	At work Related HP Colleague Grilled meat	At work	At work	At work	Absent	At work	At work Onset	At work Returning home	Test		Definitive diagnosis	Recuper-ation at home					
3	Nurse (3F South Ward)	45																		Day shift	Absent	Onset			Test	Definitive diagnosis	Recuper-ation at home			
4	Patient in orthopedics	88	Hospit alized 302	Slight fever																	Onset?					Definitive diagnosis	Continued hospitalizati on in the same hospital		Died	
5	Orthopedist	46									Absent	At work	At work	At work	At work	At work	Absent	At work	At work	At work	At work	At work	At work	At work	Absent	Onset	At work Returning home Test	Definitive diagnosis	Recuper-ation at home	
6	Inpatient	79																		Home Discharged						Test		Definitive diagnosis	Planned to be hospitalized in the same hospital	
7	Patient in orthopedics	82		Hospit alized 207	202 Transferred to another bed															Transferred to another hospital			Onset					Definitive diagnosis	⇨Transferred to another hospital Being hospitalized in the same hospital 207	
8	Nursing assistant	48																						Working Onset	Test	Negative	Hospital transfer and testing	Definitive diagnosis	OHP In hospital	
9	Nurse (3F South Ward)	45						At work	At work	At work	Absent	At work	At work	Absent	At work	At work	At work	Absent	At work	At work	Absent	At work	At work	At work	Absent	At work	Absent	Definitive diagnosis	Recuper-ation at home	
10	Patient in orthopedics	77		Hospit alized	Slight fever 301 ⇨	302													301					Onset?				Definitive diagnosis 207	Being hospitalized in the same hospital	
11	Patient in orthopedics	79															310	Cough	301								Onset?	Definitive diagnosis 207	Being hospitalized in the same hospital	
12	Patient in orthopedics	82	2/18 Hospitalized 301 ⇨																			Onset						Definitive diagnosis 207	Being hospitalized in the same hospital	
13	Patient in orthopedics	79																						退院				Test	Definitive diagnosis	Recuper-ation at home
14	Patient in orthopedics	80													Hospitalized 303 ⇨					Home Discharged	Onset							Test	Definitive diagnosis	Recuper-ation at home

The onset of disease/behavioral histories, etc. of patients are summarized in a chronological chart, to understand the link between patients (transmission route) versus time. It is important to listen, in detail regarding symptoms, shifts of beds, and contact with staff (especially the history of close contact among infected persons), in tracing the infection back to its source. This information will be used for risk assessment regarding whether the infection source remains in the ward.