

Section 2

THE COVID-19 PANDEMIC AND PROBLEMS IN THE MEDICAL CARE PROVISION SYSTEM

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1. Introduction

In 2020, the world was hit by an unprecedented pandemic. On January 28, 2020, the Japanese government enacted a Cabinet Order for COVID-19 to categorize it as a designated infectious disease under the Act on the Prevention of Infectious Diseases and Medical Care for Patients with Infectious Diseases and took measures to hospitalize infected patients. In the subsequent spread of the infection, there was a concern about the shortage of hospital beds depending on the region, so the national and local governments dealt with the situation by securing hospital beds for critically ill patients and reducing the hospitalization period or by promoting accommodation- and home-based recuperation for patients with no or mild symptoms. Thus, triage measures were undertaken to classify patients according to their medical conditions because hospital beds would be insufficient, which could lead to a medical collapse if patients with no or mild symptoms were hospitalized.

In the background to the issuance of a declaration of a state of emergency four times in Japan, there was a concern about a significant shortage of hospital beds coupled with the shortage and fatigue of health care workers, which could lead to a crisis in which the lives of critically ill patients could not be saved. If this situation continued, there was the risk that the medical care provision system could not be maintained, leading to a collapse of the health care system itself (there was a view that the collapse of the health care system actually occurred). Should the health care system collapse, the death toll from COVID-19 would increase and sufficient treatment of diseases other than COVID-19 infections could be interrupted. This situation had to be absolutely avoided.

This report discusses issues for Japan's medical care provision system that have been revealed in the wake of the COVID-19 pandemic based on data. I believe that this will contribute to a drastic restructuring of the post-COVID-19 medical care provision system in Kansai, as well as in Japan as a whole.

2. Characteristics of the Medical Care Provision System in Japan

(1) Comparison with Other Major Developed Countries

Table 3-2-1 compares the medical care provision systems of Japan and of other major developed countries in Europe and the US based on the statistics of the Organization for Economic Co-operation and Development (OECD).

Japan has the largest number of hospital beds per 1,000 population among the major developed countries. The total number of hospital beds per 1,000 population is 13.0 beds per 1,000 population, which is 4.5 to 5.2 times that of the US and the UK. Hospital beds are unevenly distributed across Japan, and the number is large in rural areas but insufficient in metropolitan areas.

There is no major difference in the number of health care workers (doctors and nurses) on a population basis among developed countries. However, the number of health care workers per 100 hospital beds in Japan is very small compared to other developed countries. The number of doctors per 100 hospital beds in Japan is 2.8 to 6.7 times smaller and the number of nurses per 100 hospital beds in Japan is 1.8 to 4.6 times smaller than that in other developed countries. The small number of health care workers per hospital beds is attributable to the large number of hospital beds in Japan.

Unlike general hospital beds and long-term care hospital beds, infectious disease hospital beds require many health care workers, as well as additional equipment, including mechanical ventilation equipment, blocking equipment, and disinfection facilities for infection prevention. The small number of health care workers per hospital beds hinders the conversion of other beds to and the

Table 3-2-1

Comparison of medical care provision systems in major developed countries

	Total number of hospital beds (per 1,000 population)	Number of doctors (per 1,000 population)	Number of nurses (per 1,000 population)	Number of doctors (per 100 hospital beds)	Number of nurses (per 100 hospital beds)
Japan	13.0	2.5	11.8	19.2	90.6
US	2.9 ^{*1}	2.6	11.9 ^{*3}	91.5	417.0 ^{*3}
Germany	8.0 ^{*1}	4.3	13.2	54.0	165.7
France	5.9	3.2	10.8 ^{*3}	53.7	182.6 ^{*3}
UK	2.5 ^{*2}	3.0 ^{*2}	7.8	120.1 ^{*2}	315.5
Italy	3.1	4.0 ^{*2}	5.6 ^{*2}	127.8 ^{*2}	179.3 ^{*2}

Note 1: *1 shows data for 2017. *2 shows data for 2019.

Note 2: *3 includes nurses who directly care for patients as well as nursing staff engaging in administration, management, research, etc. who do not directly care for patients.

Source: Created based on OECD Health Data 2020 (based on 2018 data).

increase in the number of infectious disease hospital beds. It can be said that since before the COVID-19 pandemic, there have been problems in Japan's medical care provision system to deal with infectious diseases.

(2) Infectious Disease Measures that Have Not Been Deemed Important

The problems in the medical care provision system to deal with infectious diseases existing since before the COVID-19 pandemic are also reflected in the decrease in the number of infectious disease hospital beds and the contraction of the public health center system.

Figure 3-2-1 shows changes in the number of infectious disease hospital beds and the number of infectious disease patients in Japan. Before the COVID-19 pandemic, major nationwide outbreaks of infectious diseases had not occurred in Japan for a long time and the number of infectious disease patients had decreased, so the number of infectious disease hospital beds was significantly reduced in the early 2000s and has remained at a low level since then due to small needs and higher maintenance costs compared to general hospital beds.

The total number of infectious disease hospital beds is small nationwide

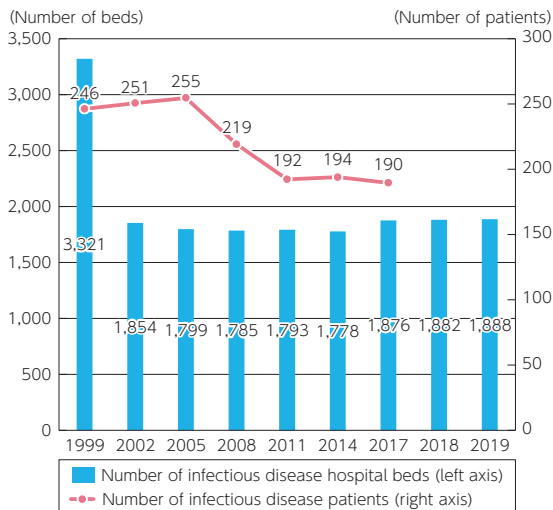


Figure 3-2-1

Changes in the number of infectious disease hospital beds and the number of infectious disease patients

Note 1: The number of infectious disease patients includes parasitic infections.

Note 2: The number of infectious disease patients represents the total number of inpatients and outpatients.

Source: Created based on the results of a survey by the Ministry of Health, Labour and Welfare.

and they are unevenly distributed across regions. Figure 3-2-2 shows the number of infectious disease hospital beds per 100,000 population in 19 prefectures where the state of emergency has been declared.

In the prefectures with metropolitan areas, such as Tokyo, Kanagawa, Aichi, Osaka, and Hyogo that had large numbers of COVID-19 infections, the number of infectious disease hospital beds per 100,000 population is at an extremely low level of 1.0 or less.

Public health centers are at the forefront of Japan's response to infectious diseases. With the spread of COVID-19, public health centers are in charge of arranging consultations with medical institutions, taking specimens, performing PCR tests, reporting test results, coordinating hospitalization and accommodation- and home-based recuperation, conducting active epidemiological investigations, and providing follow-up health services (for home recuperators, etc.). In particular, active epidemiological investigations to identify behavioral histories of infected patients are extremely important. However, it has been pointed out that the workload of public health centers has become extremely heavy alongside the spread of the infection.

Both the number of public health centers and their staff in charge of extremely important, heavy workload operations have decreased since the latter half of the 1990s, and the public health center system had become vulnerable

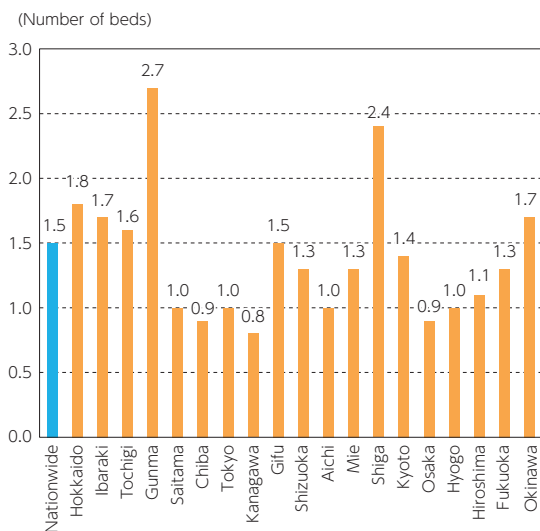


Figure 3-2-2

Number of infectious disease hospital beds per 100,000 population (2019)

Source: Created based on the results of a survey by the Ministry of Health, Labour and Welfare.

since before the COVID-19 pandemic.

There were 850 public health centers nationwide in 1990, which decreased to 469 in 2020 due to consolidation. The number of staff nationwide decreased from 34,571 in 1990 to 27,902 in 2017. Figure 3-2-3 shows the changes in the number of public health centers and the number of staff.

In short, the reason for the decrease in the number of infectious disease hospital beds and the weakened public health center system is because infectious disease measures have not been deemed important due to the small number of infected patients. The background to this is that non-communicable diseases such as cancer have become the main causes of death among Japanese people since the 1960s and infectious diseases are no longer a major concern in terms of medical policy. It can also be added that public interest has shifted to health promotion, disease prevention, rehabilitation, etc., for aging populations.

Experts have pointed out that the reduction of the threat of infectious diseases such as tuberculosis and the decrease in the weight of public health in medical policy, along with the progress of administrative and financial reforms and decentralization reforms from the 1990s, has led to a decrease in the number of infectious disease hospital beds and the weakened public health center

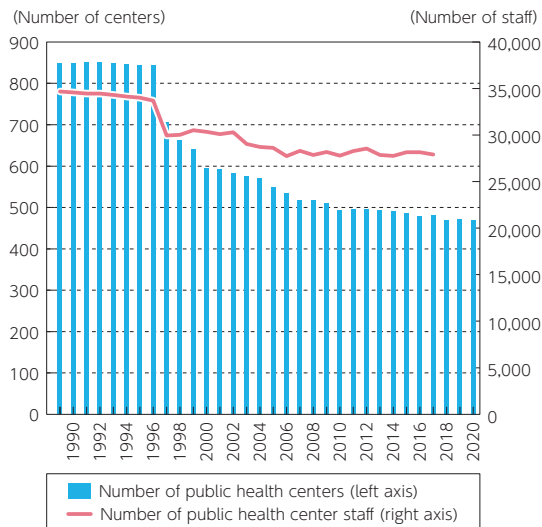


Figure 3-2-3

Changes in the number of public health centers and the number of public health center staff

Note: The source materials do not include data on the number of staff for 2018 and subsequent years.

Source: Created based on the database from the National Institute of Population and Social Security Research and materials from the Ministry of Health, Labour and Welfare.

system¹⁾.

In 2009, the threat of infectious diseases surfaced due to the outbreak of the novel influenza pandemic that affected Japan, and the Report of the Review Meeting on Measures against Pandemic Influenza (A/H1N1) compiled by specialists and experts in June 2010 after the end of the pandemic recommended the strengthening of the medical care provision system by enhancing the public health center system and securing medical staff and equipment for specialized medical institutions that accommodate high-risk patients to address future emerging and re-emerging infectious diseases. However, this recommendation was not fully utilized and overlooked without serious discussion.

3. Problems in the Medical Care Provision System in Japan

(1) Shortage of Health Care Workers per Hospital Beds

The medical care provision system in Japan has had five waves of the rapid spread of COVID-19 infections without sufficient countermeasures in place against infectious diseases, including COVID-19.

As a result, despite the number of infected people per capita being only one tenth that of the US and the UK, Japan encountered a problem of a strained medical care provision system.

The government took steps to support medical institutions to ensure hospital beds for COVID-19 patients and suspected patients. In addition, under the amended Act on the Prevention of Infectious Diseases and Medical Care for Patients with Infectious Diseases enacted in February 2021, prefectural governors were allowed to request medical institutions to secure hospital beds for COVID-19 patients. As this is a legal request, the names of the hospitals would be disclosed if they did not comply with the request. Under the amended Act, Nara Prefecture made the nation's first request to medical institutions in April 2021, followed by Osaka Prefecture and Tokyo. On September 30, 2021, Osaka Prefecture opened the Osaka COVID-19 Large-Scale Medical Care and Recuperation Center for mildly ill patients as a temporary medical facility.

However, it did not provide a sufficient number of hospital beds to accommodate the sharply increased number of COVID-19 patients. In particular, Japan is lagging behind in terms of securing hospital beds, such as ICU beds for critically ill patients on the verge of death who need a ventilator or ECMO (Extracorporeal Membrane Oxygenation) or treatment in the Intensive Care Unit

1) Mihara, Takashi (2020)

(ICU) or High Care Unit (HCU)²⁾. The number of hospital beds including those in ICUs per 100,000 population is 34.7 in the US, 29.2 in Germany, and 13.5 in Japan which is less than half that of Germany³⁾. Therefore, as the number of critically ill patients increases, hospital beds will soon run out.

The essence of the problem identified is not the shortage of hospital beds. As shown in Table 3-2-1, the number of hospital beds in Japan is very large, so inherently the number of health care workers per hospital beds is small. The essence of the problem is the significant shortage of workers in medical institutions identified as accommodating COVID-19 patients who need 24-hour care by a large number of health care workers. It can be said that this is a serious structural problem of the Japanese medical system.

Converting other beds to infectious disease hospital beds is not easy because they require mechanical ventilation, blocking for infection prevention, and other equipment. Even if there are hospital beds, they cannot be utilized without properly trained health care workers, which is also a major problem.

Critically ill patients with COVID-19 take a long time to recover after being admitted to hospitals. They also require advanced medical equipment and devices, as well as careful deployment of health care workers and their careful treatment. Medical institutions that accommodate critically ill COVID-19 patients also need to provide emergency medical care and treatment and surgeries for patients with other serious illnesses. Therefore, it is not surprising that labor shortages become serious.

(2) Dispersion of Special Health Care Workers

In order to save life-threatening, critically ill patients with COVID-19, the involvement of intensive care physicians is essential, in addition to intensive care unit facilities.

The problem of the dispersion of intensive care physicians has already been pointed out by health economics researchers⁴⁾. According to an analysis of hospital bed usage in 341 hospitals that accommodated 5,018 COVID-19 patients in the period from February to June 2020, 62% of the hospitals that accommodated COVID-19 patients had ICUs, and 73% had ECMO, but only 48% had intensive care physicians, and the analysis pointed out that the shortage of human re-

2) An intensive care unit is a special unit in a hospital used to provide intensive treatment for critically ill patients who are difficult to treat in a general ward. The high care unit is a unit where patients with a slightly less severe condition than ICU patients are accommodated.

3) Based on the results of the survey conducted by the Ministry of Health, Labour and Welfare (May 2020).

4) Watanabe, Sachiko and Aki, Yoshikawa (2021)

Table 3-2-2 Hospitals with intensive care physicians (Kansai)

Number of intensive care physicians	Number of hospitals					
	Shiga	Kyoto	Osaka	Hyogo	Nara	Wakayama
15-21	0	0	2	0	0	0
10-14	1	2	1	2	0	0
5-9	0	3	8	3	2	0
2-4	3	2	16	10	1	2
1	4	11	22	12	3	1

Source: Created based on the materials published on the website of the Japanese Society of Intensive Care Medicine.

sources was the bottleneck rather than the hardware.

Next, let's look at the deployment status of intensive care physicians belonging to medical institutions in six prefectures in Kansai based on the registration list published on the website of the Japanese Society of Intensive Care Medicine (Table 3-2-2).

As shown in Table 3-2-2, intensive care physicians are dispersed in Osaka, Hyogo, and Kyoto Prefectures with a large number of infected people. Of particular concern is that many medical institutions, of 22 hospitals in Osaka, 12 in Hyogo Prefecture, and 11 in Kyoto Prefecture, have only 1 intensive care physician per hospital.

When critically ill COVID-19 patients who require ECMO are admitted, they need specialists and 24-hour continuous care, and it is very difficult for a single doctor to deal with this. At least two specialists need to be assigned to respond to unexpected circumstances as well. In addition, in order to ensure the quality of advanced medical care and to increase the number of lives that can be saved, it is better to concentrate in one place a limited number of specialists for treatment.

The Osaka Covid-19 Critical Care Center that began operations on December 15, 2020, has been highly evaluated in that it concentrates in one place specialists and nurses with experience in intensive care for patients on ventilators. Going forward, it will be an important issue to promote the concentration of specialists over a wide area across prefectures in the Kansai region.

4. Establishing a Medical Care Provision System, Taking into Account Emergency Situations

Through its response to COVID-19, we learned how vulnerable Japan's medical care provision system is to infectious diseases that could cause pandemics. The issues revealed include inherent structural problems coupled with insufficient

responses to COVID-19.

As with other large-scale disasters, it is necessary to position the spread of an infectious disease as an emergency (situation) in which medical demand greatly exceeds the medical supply capacity and to develop a medical care provision system accordingly in the future, including what should be prepared during normal times and how to respond to an emergency situation quickly and flexibly.

In the medium to long term, population decline and aging are projected to continue. Taking into account changes in the structure of diseases, we need to promote differentiation and coordination of hospital bed functions to maintain a high-quality and efficient medical care provision system to meet future medical demand. In that sense, Community Health Care Visions⁵⁾ need to be steadily promoted by prefectures during normal times.

On the other hand, based on the lessons from COVID-19, responses to emerging infectious diseases must be clearly defined in prefectural Medical Care Plans⁶⁾. It is also necessary to develop specialized human resources and secure advanced medical facilities, while cooperating with local hospital associations and medical associations, and formulate measures to convert other beds to infectious disease care beds and to concentrate and coordinate specialized health care workers across medical institutions during normal times to prepare for emergency situations⁷⁾. It is important to build a mechanism to flexibly switch to emergency medical care while maintaining a balance with general medical care.

Similar to the idea of redundancy in disaster countermeasures, there may be an idea that it is necessary to maintain empty hospital beds as a buffer for infectious disease measures. But since there is a positive correlation between the number of hospital beds and medical expenses per person, this idea must be carefully examined to avoid imposing a heavy financial burden on the public during normal times.

In FY 2023, the 8th Medical Care Plan (FY 2024–FY 2029) is scheduled

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- 5) Community Health Care Visions are the visions of the medical care provision system that should be aimed at based on the demand for health care in 2025 and that had been formulated by all prefectures by the end of FY 2016. General beds and long-term care beds are covered by the Visions, but not infectious disease hospital beds.
 - 6) Medical Care Plans are formulated by each prefecture to ensure the medical care provision system in each prefecture. The Plans intend to manage the medical care provision in terms of quantity (the number of hospital beds) and evaluate quality (medical coordination, medical safety).
 - 7) In the revised Medical Care Act enacted on May 21, 2021, it was decided to clearly define matters related to ensuring the medical care provision system in the event of the spread of emerging and other infectious diseases in the Medical Care Plans.

to be formulated in each prefecture, so we expect the medical care provision system to be reviewed and examined with emergency situations in mind. The government should provide the necessary support along with strengthening the system of public health centers.

Now that socio-economic activities are once again becoming widespread, infectious disease measures may not be sufficient on a prefectural basis alone. Kansai is one of the advanced areas in terms of wide-area medical cooperation across prefectures that is currently required. On March 15, 2020, the Union of Kansai Governments decided to promote wide-area supply coordination of pharmaceuticals, medical equipment, and medical professionals; wide-area cooperation for medical testing; and wide-area patient acceptance system.

In addition, since ICT networking has been delayed in Japanese medical care, it is also important to build a network that connects individual hospitals so that the government and medical care and emergency-related organizations can identify the availability of hospital beds, including ICU beds, in individual hospitals online at any time.

Finally, **Figure 3-2-4** is a diagram that explains the medical care provision system during normal times and during an emergency. In an emergency situation when an infectious disease spreads, it is expected that the treatment effect will be improved by setting up separate wards and dedicated hospitals

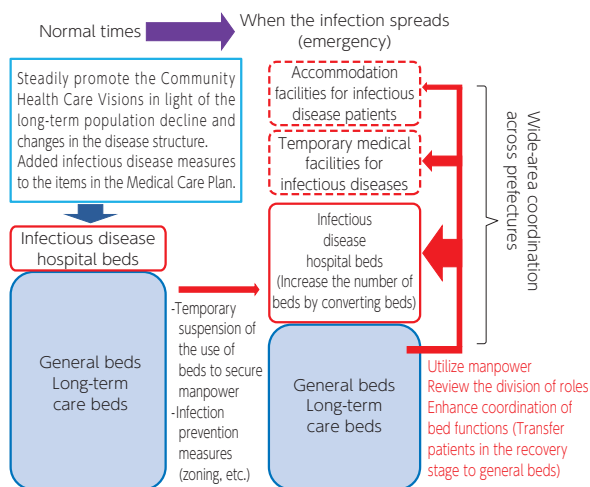


Figure 3-2-4

Medical care provision systems at normal times and in emergencies (Image diagram)

Source: Created based on the materials (dated December 25, 2020) of the Healthcare Subcommittee, Social Security Council, Ministry of Health, Labour and Welfare.

and concentrating⁸⁾ specialized health care workers and critically ill patients in them. At the same time, patients who have entered a recovery stage need to be transferred to general beds in other hospitals. In order to achieve that, wide-area coordination of hospital beds across prefectures may be required⁹⁾.

By concentrating medical resources and promoting the division of roles and cooperation across medical institutions, medical resources such as hospital beds and health care workers can be effectively utilized. Since saving as many lives as possible improves people's sense of security, information should be provided to the public at any time it is necessary and the mechanism for switching between normal and emergency medical care provision systems should be visualized.

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8) It is the same idea as that of the Society of Critical Care Medicine (SCCM) that recommends implementing a "tiered staffing model" with intensive care staff at the top during a pandemic (Neil A. Halpern & Kay See Tan (2020)).

9) Fundamentally, the government should consider a system that allows it to give direct and strong instructions to medical institutions and local governments regarding hospital bed coordination.