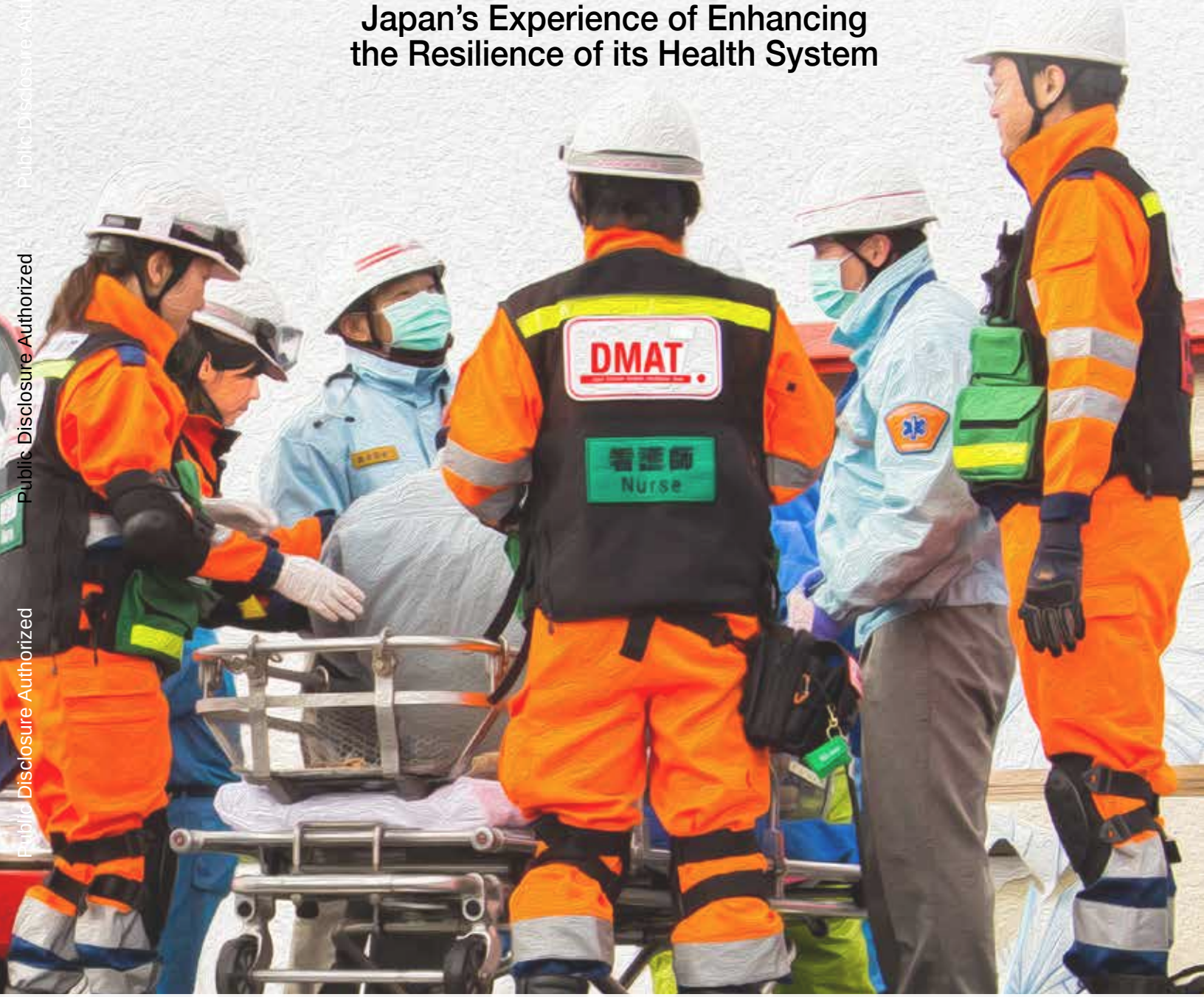
Preparing Health Systems for Shocks

Japan's Experience of Enhancing the Resilience of its Health System



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Cover photo: Fire and rescue demonstration in Kanagawa, Japan. Photo: Aduldej

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Acknowledgments

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Acronyms

BCP	Business Continuity Planning
CAICM	Cabinet Agency for Infectious Disease Crisis Management
COVID-19	Coronavirus disease (2019)
CSO	Civil Society Organization
DCBA	Disaster Countermeasures Basic Act
DHEAT	Disaster Health Emergency Assistance Team
DMAT	Disaster Medical Assistance Team
DPAT	Disaster Psychiatric Assistance Team
DRM	Disaster Risk Management
DWAT	Disaster Welfare Assistance Team
EHR	Electronic Health Record
EMIS	Emergency Medical Information System
ETR	Emergency Transportation Road
EU	European Union
FDMA	Fire and Disaster Management Agency
FY	Fiscal Year
GDP	Gross Domestic Product
GEJE	Great East Japan Earthquake and Tsunami (2011)
GFDRR	Global Facility for Disaster Reduction and Recovery
GHAE	Great Hanshin Awaji Earthquake (1995)
GMIS	Gathering Medical Information System
HQ	Headquarters
ICT	Information and Communications Technology
JDA-DAT	Japan Dietetic Association-Disaster Assistance Team
JICA	Japan International Cooperation Agency
JMA	Japan Medical Association
JMAT	Japan Medical Association Team
JRAT	Japan Disaster Rehabilitation Assistance Team

LTCI	Long-Term Care Insurance Act
MERS	Middle East Respiratory Syndrome
METI	Ministry of Economy, Trade and Industry
MEXT	Ministry of Education, Culture, Sports, Science and Technology
MHLW	Ministry of Health, Labour and Welfare
MIC	Ministry of Internal Affairs and Communications
MLIT	Ministry of Land, Infrastructure, Transport and Tourism
MoFA	Ministry of Foreign Affairs
NCGM	National Center for Global Health and Medicine
NDMS	National Disaster Medical System
NIED	National Research Institute for Earth Science and Disaster Resilience
NIID	National Institute of Infectious Diseases
NPO	Non-Profit Organization
OECD	Organisation for Economic Co-operation and Development
PDD	Preventable Disaster Death
PHC	Public Health Center
SARS	Severe Acute Respiratory Syndrome
SDG	Sustainable Development Goal
SHIS	Statutory Health Insurance System
TVAC	Tokyo Voluntary Action Center
WHO	World Health Organization

Executive Summary

The resilience of health systems is crucial for providing lifesaving care during crises such as pandemics, disasters, and other major shocks. For example, during the COVID-19 pandemic, almost all countries struggled to deal with the unprecedented scale of the challenge. However, countries with better access in normal times to high-quality health care adapted more easily to the surge in patients numbers, managing to provide essential care for both COVID-19 and non-COVID-19 patients (see Figure 2.1). Similarly, in the aftermath of disasters caused by natural hazards, such as earthquakes, typhoons, and floods, health systems like Japan's, which had integrated disaster preparedness and response, demonstrated their ability to maintain critical services, including emergency medical care and public health support, despite damaged infrastructure and disrupted supply chains (see Box 3, Box 4, Box 5, Box 6, Box 7).

The resilience of health systems is more crucial than ever, yet remains a highly challenging proposition. Such resilience can be defined as "the capacity of health sector agents and institutions to mitigate, reduce, manage, and rapidly recover from crisis."[1] Crisis situations can exacerbate existing limitations in health care capacities, particularly in low-income countries. Factors like climate change, urbanization, fragile and conflict-affected situations, and demographic shifts will place further strain on health systems where a significant portion of the population already struggles to access affordable, high-quality health care owing to shortages of equipment, skilled personnel, and resources.

Health care facilities are critical lifeline infrastructure, dependent on access to other lifeline infrastructure, such as transportation, water, energy, and information communication technology (ICT), for service delivery and resilience in the face of disasters. Disasters can disrupt health care services by damaging buildings and equipment. In contrast, pandemics typically do not cause direct physical damage to infrastructure. However, during infectious disease outbreaks, lifeline services, including special treatment rooms or lifesaving equipment, can be disrupted due to restrictions, and shortages of human and other resources. (See section 3.5 Quality Infrastructure Supporting Health Systems)

This report, focusing on Japan's experiences, showcases how the country incrementally strengthened the resilience of its health system by enhancing its capacity to prepare for, respond to, and recover from crises, drawing valuable lessons from its experience of major earthquakes, floods, and infectious disease outbreaks. The report emphasizes the country's efforts, focused on the intersection of health systems, disaster risk management (DRM), and quality infrastructure, integrating these sectors through the development of key regulations, governance mechanisms, and capacity building for all stakeholders involved in strengthening the health system's ability to withstand shocks. It aims to share these historical experiences and early lessons learned from the COVID-19 pandemic with public sector decision-makers and practitioners elsewhere who face similar challenges, providing practical reference material to inform and inspire shock-resilient policy reforms and infrastructure investments. The report primarily focuses on Japan's public health systems while also illuminating the critical infrastructures that support medical services during disasters—such as hospitals and energy, transportation, and IT infrastructure—and key regulations and systems that enable pandemic response. Japan's experience, as highlighted in this report, offers a mix of governance systems, legal and regulatory frameworks, policy making, institutional set-ups, capacity building, and investment in building and infrastructure. The carefully selected cases represent a range of financial investments—modest to large—and cover short-, medium-, and long-term engagements likely to include relevant examples for countries at various socioeconomic stages.

Country Context

Japan's decentralized governance structure, shrinking and aging population, and disaster-prone geography have significantly influenced its health system. The country has a high life expectancy, but the aging population is straining its health services. Japan's experiences with

[1] Rentschler et al., 2021.

major disasters such as the Great Hanshin Awaji Earthquake (GHAE) and the Great East Japan Earthquake (GEJE) have driven continuous improvements in disaster preparedness and response.

Japan's Health System

High-quality health services are comprehensive and accessible to all citizens, addressing a broad spectrum of health care needs, from preventive services to acute and long-term care. These services include medical consultations and treatment, emergency care, maternity and childcare, long-term care for the elderly, mental health services, and dental care.

Since 1961, Japan has provided health care coverage to almost all citizens through the Statutory Health Insurance System (SHIS), which is financed by a combination of taxes, mandatory individual contributions, and out-of-pocket charges. While Japan's health care expenditure is on the rise, accounting for 8% of the country's GDP in 2021, almost half of these costs are sourced from insurance premiums, with the rest coming from national and local government funds and patient co-payments.

As health care facilities constitute critical lifeline infrastructure, Japan, known for its frequent devastating disasters, has implemented a combination of structural and nonstructural measures to enhance their disaster resilience, including:

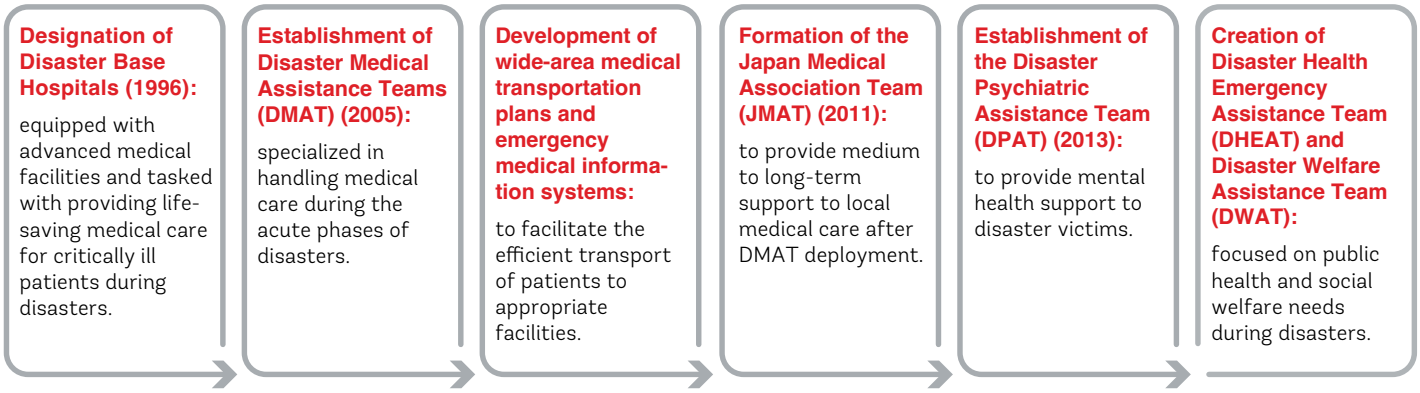
- Seismic standards for buildings, updated several times to integrate lessons learned from earthquake damage to buildings;
- Flood protection measures, such as barrier shields, and drainage pumps;
- Business Continuity Plans (BCPs), to ensure that health services continue during crises;
- Disaster Medical Assistance Teams (DMATs), medical emergency specialists sent to disasters or incidents to provide emergency care;
- Emergency Transport Roads (ETRs), designated as such to ensure access to hospitals for emergency vehicles carrying out evacuation, rescue, and supply of goods;
- Priority electricity recovery mechanisms, to prioritize the restoration of power to medical facilities during disasters; and
- Resilient communication systems, such as satellite telephones, to ensure resilient communication during disasters.

Japan's Disaster Medicine and Infectious Disease Control

Japan's disaster medicine has evolved through lessons from past disasters, with significant enhancements made for rapid response (after the 1995 Great Hanshin Awaji Earthquake)**, long-term and multifaceted care** (after the 2011 Great East Japan Earthquake and Tsunami), **and multistakeholder and sectoral coordination mechanisms** (after the COVID-19 pandemic). Key elements include: Disaster Medical Assistance Teams (DMATs) for rapid deployment and acute medical care; Disaster Psychiatric Assistance Teams (DPATs) addressing mental health needs post-disaster; integrated care systems for disaster victims; and robust surveillance and response systems enhanced by lessons from the COVID-19 pandemic.

Disaster medicine, defined as the delivery of emergency health and medical services to injured or ill victims of medical or environmental disasters,[2] was first formalized in Japan in the 1990s and has continuously evolved since then, aiming to reduce disaster-related casualties. The key developments can be summarized as follows (Fig. ES.1):

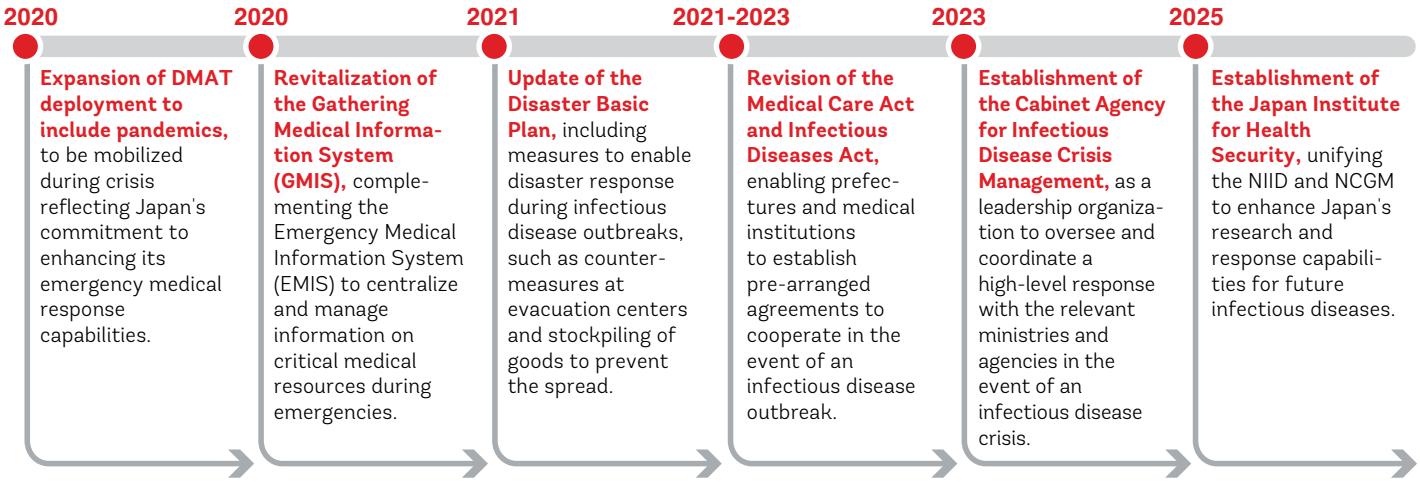
Figure ES.1 Summary of Disaster Medicine key developments in Japan



Japan's efforts for infectious disease control started with the *Act on the Prevention of Infectious Diseases and Medical Care for Patients with Infectious Diseases (Infectious Disease Control Act)* enacted in 1998. The Act classifies infectious diseases based on their contagiousness and severity of symptoms, outlining the government's responsibilities for surveillance and response. Since its establishment, the Act has undergone six revisions, catalyzed by such events as the 2002–2004 SARS outbreak, the 2014–15 avian influenza outbreak, and the COVID-19 outbreak starting in 2020.

The COVID-19 pandemic catalyzed a suite of regulatory reforms to further strengthen the resilience of the Japanese health system. The key developments are summarized in Fig. ES.2.

Figure ES.2 Regulatory reforms to strengthen the resilience of the Health System in Japan



[2] ScienceDirect, n.d. Disaster Medicine.

Key Insights

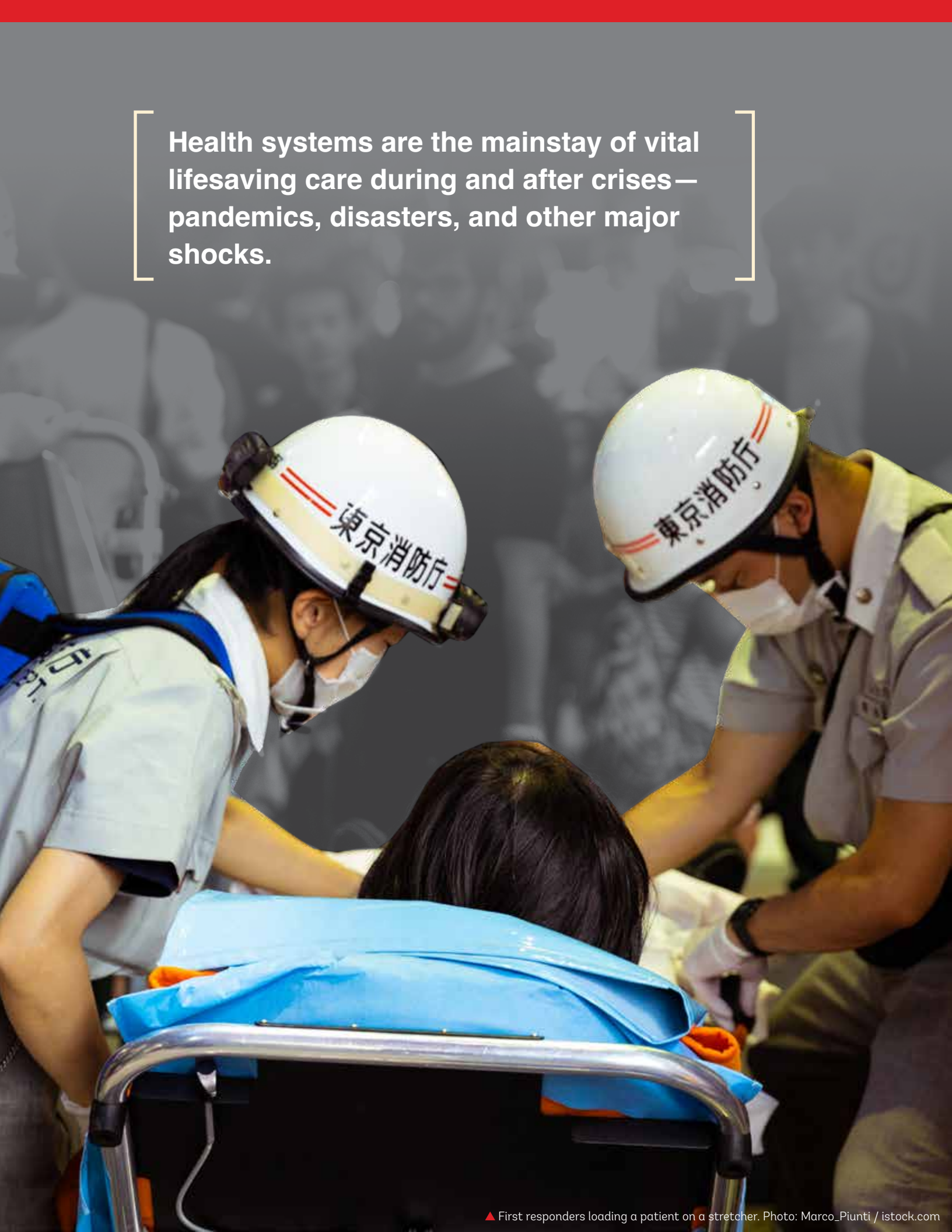
Japan's health system continues to evolve to be able to manage future shocks. The country faces ongoing challenges, including an aging population and increasing social security costs. Future efforts will focus on expanding disaster preparedness across diverse health service providers, integrating infectious disease management with disaster response, leveraging technology for efficient patient management and resource distribution, and strengthening cross-sectoral partnerships for comprehensive disaster response.

Japan's ongoing journey to enhanced health system resilience can offer valuable inspirations for other nations. The following eight key insights emerge from Japan's experience:

1. Establishing a strong foundational health system is crucial for efficient and resilient health systems. Enhancing the capacity to deliver high-quality and accessible care is essential for managing the routine demands and enabling health systems to effectively respond to various types of shocks while maintaining continuous service delivery.
2. Institutionalizing a culture of incremental learning from both past and present experiences, and enhancing good practices and lessons learned, significantly improves the implementation and impact of health services.
3. Offering proactive support across various facets of the health sector at the national and local government levels helps to create an enabling environment for those working on the frontline.
4. Establishing robust mechanisms for ex-ante preparedness, emergency response, and early recovery is crucial for ensuring health sector resilience, minimizing service disruption and mitigating the impact of future disasters.
5. Investing in the resilience of the buildings—through both structural and nonstructural interventions—is crucial for establishing a resilient health system.
6. Integrating flexibility and avoiding redundancy are key to creating more efficient shock-resilient health systems.
7. Establishing a strong cross-sectoral coordination and partnership mechanism—in normal times—will significantly enhance preparedness during emergencies and crises situations.
8. Integrating evolving social needs and changes is essential for continuously updating and enhancing health-related policies to maintain resilient health systems.

By reviewing these insights, other countries may explore how they might enhance their own health system resilience and strengthen their preparedness and response capacities for the crises and shocks ahead. To facilitate exchanges of global and Japanese good practices related to disaster and climate resilience, the World Bank Tokyo Disaster Risk Management Hub, supported by the Government of Japan, offers various services for interested governments through *Climate and Disaster Risk Management for Health Systems* as part of the World Bank investments and technical assistance engagements.

Health systems are the mainstay of vital lifesaving care during and after crises—pandemics, disasters, and other major shocks.



▲ First responders loading a patient on a stretcher. Photo: Marco_Piunti / istock.com

1 Introduction

1.1 Background

Health systems[3] are the mainstay of vital lifesaving care during and after crises—pandemics, disasters, and other major shocks. These emergency situations require local and national health facilities and medical personnel to coordinate with diverse stakeholders and respond swiftly and effectively to provide urgent care and minimize loss of life.

More than ever, the resilience of health systems is important, albeit highly challenging. The resilience of health systems is essentially "the capacity of health sector agents and institutions to mitigate, reduce, manage, and rapidly recover from crisis".[4] Crisis situations can exacerbate existing limitations in health care capacities, particularly in low-income countries. Factors like climate change, urbanization, fragile and conflict-affected situations, and demographic shifts can put health systems under further strain, leaving a significant portion of the population unable to access affordable, high-quality health care for lack of equipment, skilled personnel, and resources.

Over time, Japan has strengthened the resilience of its health systems, learning from each experience of disaster. The country introduced universal health care in 1961 and since then has strived to make quality care accessible to all its citizens. Japan is highly vulnerable to disasters caused by natural hazards such as typhoons, earthquakes, tsunamis, or volcanic eruptions. Given its repeated experience of building back from large-scale disaster, Japan has incrementally enhanced its health systems' capacity to prepare for, respond to, and recover from disasters. Notably, the significant learnings from the 1995 Great Hanshin Awaji Earthquake (GHAE), and the 2011 Great East Japan Earthquake and Tsunami (GEJE), have been instrumental in the development and improvement of disaster medicine[5] within the country (see section 4. Japan's Disaster Medicine and Infectious Disease Control). During the 2024 Noto Earthquake, more than 1,000 Disaster Medical Assistance Teams (DMATs) were deployed all over Japan (significantly

[3] The World Health Organization (WHO) Health Systems Strengthening Glossary defines a health system as: 1) All the activities whose primary purpose is to promote, restore and/or maintain health; 2) The people, institutions and resources, arranged together in accordance with established policies, to improve the health of the population they serve, while responding to people's legitimate expectations and protecting them against the cost of ill-health through a variety of activities whose primary intent is to improve health. For more information, see WHO, n.d.

[4] Rentschler *et al.*, 2021.

[5] Disaster medicine is a branch of health care focused on assessing public health risks, planning for future disasters, and implementing emergency strategies to aid recovery. See Stewart, 2023.

more than the 380 teams seen during the GEJE). The DMAT experts not only provided life-saving medical care to direct victims of disasters but also strove to minimize the disaster-related deaths[6] that typically follow disaster-related injuries, or result from illness at evacuation centers, and often account for the majority of deaths from disasters.

As in many other countries, the COVID-19 pandemic prompted Japan to reflect upon and further strengthen the resilience of its health systems not only to disasters, but also to pandemics. Before the first COVID-19 case was reported in Japan in early 2020, Japan had limited experience of mounting a pandemic response.[7] Therefore, a number of regulatory and institutional reforms needed to take place to enable Japan's health systems to quickly and effectively respond to this rare crisis. The process also spurred Japan to conceive and implement longer-term reforms to ensure that its health system can prepare for and manage various shocks, including disasters and pandemics.

1.2 Objective and Scope of the Report

This report aims to showcase how Japan has evolved its health system over time, in order to strengthen its resilience against shocks from disasters and pandemics. As a case study, the report focuses on the intersection between health systems, disaster risk management (DRM), and quality infrastructure, and aims to share experiences and early lessons learned in Japan from the nation's recent efforts to better integrate and harmonize these three essential components of health system resilience. The report primarily examines Japan's public health systems while also highlighting the essential infrastructures that support medical services during disasters, including hospitals and transportation, as well as the key regulations and frameworks that facilitate pandemic response. The Japanese experience, as this report explains, is in effect a blend of governance structures, legal and regulatory frameworks, policy making, institutional arrangements, capacity building, and infrastructure investments. The carefully selected cases illustrate a spectrum of financial commitments, ranging from low-cost initiatives to significant investments, addressing short-, medium-, and long-term strategies that may serve as valuable examples for countries with varying socioeconomic conditions.

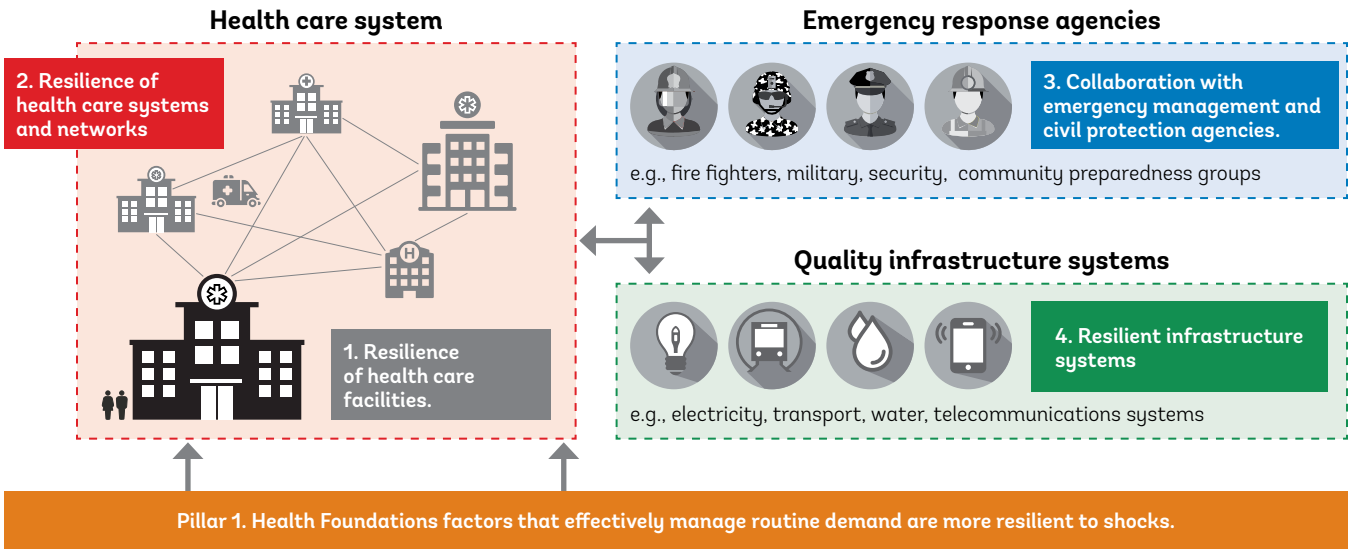
The primary audiences of this report are public sector decision-makers and practitioners in the health and DRM sectors in low- and middle-income countries who face similar challenges and preoccupations—in normal and exceptional times alike—while delivering essential, high-quality health care services. It aims to serve as a practical reference to inform and inspire shock-resilient policy and infrastructure investments. As such, the report focuses on providing curated summaries and takeaways from Japan's approach, gathered from the health care and DRM practitioners' community in Japan, rather than presenting a comprehensive analytical study.

[6] For example, disaster-related deaths from Kumamoto Earthquake in 2016 were four times more (218 people) than direct deaths from the earthquake (50 people). For more information, see Digital Archive of Kumamoto Disaster, n.d.

[7] Historically, Japan has faced some infectious disease outbreaks, including the Spanish Flu in 1918. More recently, in 2003, Japan prepared for the SARS outbreak response; however, no domestic outbreak was reported. For more information, see section 2.4.

The report is structured as a complementary resource to the World Bank's report, *"Frontline: Preparing Healthcare Systems for Shocks from Disasters to Pandemics (2021)"*, providing examples from Japan. The 2021 Frontline report, developed with support from the Global Facility for Disaster Reduction and Recovery (GFDRR), which administers the Japan-World Bank Program for Mainstreaming DRM in Developing Countries, offers recommendations on how to better prepare health systems to respond to a wide range of shocks, from seasonal demand surges, to pandemics, climate change, and disasters. The Frontline report presents an integrated framework for resilience of health systems, that are embedded in a wider network of emergency response systems, and underpinned by the quality of infrastructure assets on which they depend (Figure 1.1). The Frontline report organizes the lessons learned from global disaster risk and emergency management practices along five pillars of priority actions to develop more reliable, shock-resistant health care services (Figure 1.2). This Japan case study report builds on this work, by providing selected examples from Japan on how these actions have thus far been implemented in Japan. By doing so, it aims to further assist and inspire other countries to advance their efforts toward designing and implementing their own framework for a more resilient health system.

Figure 1.1 Resilience of Health Systems: The Bigger Picture



Source: Rentschler et al., 2021.

Figure 1.2 Five pillars of resilient health systems and respective priority actions

Pillars	Priority actions		
 **Foundations: health systems that can effectively manage routine demand**	**Ensure universal access to routine health care by:**	• Strengthening managerial and operational capacity, governance, and planning systems • Strengthening the technical and administrative capacities of the health workforce, including through specialized crisis trainings • Improving health information systems for identifying new risks, vulnerabilities, capacity bottlenecks, and information sharing	• Ensuring the availability of essential medical supplies and equipment • Mobilizing and allocating the financial resources needed for routine operations and crisis response
 **Resilient health facilities**	**Ensure adequate capacity and resilience of facilities by:**	• Upgrading structures to withstand shocks and ensure self-sufficiency • Enhancing staff capacity and training • Improving facility and inventory management to maximize utility of limited resources • Maintaining emergency stocks of essential medical supplies	• Expanding capacity where possible based on needs (for example, number of intensive care unit beds) • Preparing crisis protocols for boosting capacity and ensuring basic level of care provision (for example, business contingency plans)
 **Resilient health systems**	**Integrate individual health facilities into a coordinated network and improve cooperation during crises by:**	• Using data-driven approaches to identify surge demands early and distribute loads to health facilities and service modalities more effectively • Improving communication and cooperation between entities in the health system to manage surge demand during disasters	• Leveraging solutions for delivering health care services outside health facilities, including community centers, telemedicine, pharmacies • Deploying mobile clinics to underserved and disaster-hit areas to boost the capacity of permanent health facilities
 **Integrated emergency response**	**Integrate health care into DRM systems by:**	• Efficiently meeting wide-ranging critical needs during crises, including food, shelter, security, and health care • Coordinating with search and rescue agencies such as civil protection and the military to manage health service demand • Establishing interagency communication channels before disasters strike	• Clearly defining roles and mandates for crisis response to mitigate capacity bottlenecks • Enhancing hydrological, meteorological, and early warning services and disseminating information to agencies and the public • Integrating health system needs in disaster risk finance strategies
 **Resilient infrastructure**	**Ensure the resilience of critical infrastructure systems on which health facilities depend by:**	• Upgrading transport, water, electricity, and telecommunications assets in critical areas • Strengthening cyber resilience • Improving infrastructure maintenance regimes	• Mandating risk-informed infrastructure planning, with higher standards for health system-relevant assets • Leveraging new technologies for service and supply delivery

Source: Rentschler et al., 2021.

The report also builds on existing knowledge already captured in the various Japan case study reports. Since 2014, GFDRR through the Japan-World Bank Program for Mainstreaming DRM in Developing Countries, has developed various knowledge products and tools capturing lessons learned on strengthening resilience against disasters and climate change. These knowledge products feature a range of examples and lessons learned on building back from past earthquakes and floods, focusing on topics such as disaster simulation drills, building regulations, risk assessments, disaster risk finance and insurance, and resilient schools, transport, water and sanitation, industries, and so forth. This study, focusing on Japan's health system resilience, serves as an addition to the suite of knowledge resources on Japanese DRM and resilient infrastructure, produced by the World Bank Tokyo Disaster Risk Management Hub. A list of existing reports that provide helpful background to the health system resilience in Japan are presented below in the Annex.

1.3 Structure of the Report

This report is structured into the following sections:

Section 1. Introduction – explains the background, scope and objectives, and structure. It illustrates how this case study report builds on past and ongoing efforts, to provide concise examples of how Japan has worked toward strengthening health system resilience against various shocks. The report targets government leaders and practitioners in low- and middle-income countries.

Section 2. Country Context – provides a basic overview of Japan's governance structure, demographics, and key health challenges and disaster risks.

Section 3. Japan's Health System – provides key highlights on Japan's health services, and its connection with the DRM system, including key financing, regulations and actors, and high-quality infrastructure that supports the health system.

Section 4. Japan's Disaster Medicine and Infectious Disease Control – focuses on the branch of the health care system in charge of assessing public health risks, planning for future disasters, and implementing emergency strategies to aid recovery. The section also looks at Japan's efforts to control infectious diseases, as well as impacts and early lessons learned from the COVID-19 pandemic response.

The report includes more than a dozen textboxes, each of which recounts an example of Japan's efforts to strengthen health system resilience. These stories demonstrate how Japan has implemented priority actions for establishing a resilient health system, as presented in the Frontline report. The examples were selected based on consultations with Japanese experts[8] who have practical experience working at the intersection of health systems and emergency response operations, and dealing with disasters and health emergencies, including earthquakes, floods, and the COVID-19 pandemic. In their choice of these examples, the authors have been mindful of the significant differences between the governance, health system, DRM and quality

[8] See Acknowledgments section for the complete list of experts consulted.

infrastructure context of Japan and countries that the World Bank supports, and therefore strive to provide useful, and on occasion inspirational insights. It must be acknowledged that the examples from the COVID-19 response are based on early lessons and insights, rather than proven best practice. Nevertheless, they may well resonate powerfully with relevant experiences—and challenges—encountered in a number of countries.

Section 5. Key Insights – the final section distills and summarizes some key insights from Japan that may be of relevance for professionals working toward enhancing health sector resilience in low- and middle-income countries. It aims to assist and inspire leaders, policy makers and practitioners working in this field to draw upon policy and actions tested in Japan, the better to explore how to design and implement actions to enhance the resilience of health systems in their own countries and institutions.

Finally, an extensive bibliography gathers references and additional resources from Japan and elsewhere.

2

Country Context

2.1 Japan's Governance Structure

Japan is decentralized—in theory and in practice—such that the national and local governments fulfill their distinct roles and responsibilities, in accordance with *the Local Autonomy Act*.[9] At the national level, Japan has a parliamentary system of governance organized into legislative, executive, and judiciary branches, grounded in popular sovereignty. The local government system in Japan consists of two tiers: first, the prefectures, and second, their constituent municipalities. Currently, there are 47 prefectures, and 1,718 municipalities.[10] *The Local Autonomy Act* delineates distinct roles and responsibilities for both central and local governments. The central government focuses on tasks requiring a nationwide approach, such as international relations, establishing fundamental regulations for locally coordinated authorities, and executing measures and projects that demand a unified national approach.

Local governments handle matters directly affecting residents, including health care, DRM and emergency response, infectious disease control, and infrastructure development and management in their localities—in close coordination with the national government. In principle, local governments are responsible for education, social and health services, waste management, infrastructure (local roads, river management, sewers), public housing, and police, emergency, and fire services. Prefectures oversee broader regional initiatives and collaborate with municipalities on any administrative tasks that exceed municipal capacities. Municipal governments cover affairs not addressed at the prefecture level, managing the local-level implementation of a diverse range of public sector services. However, because of limited tax revenues, most local governments in Japan are reliant on financial support from the national government to cover their expenditure (distributed through local allocation taxes, grants, and so forth). In the fiscal year 2023, of the 114 trillion yen (approximately US$ 867 billion) budget, the Japanese government allocated 14.3% of its total expenditure, 18.4 trillion yen (approximately US$ 140 billion), to local governments.[11] Thus although the local governments have significant responsibility derived from their mandate for local governance, they inevitably coordinate very closely with the national government.

[9] The Local Autonomy Act. Available (in Japanese) at: https://elaws.e-gov.go.jp/document?lawid=322AC0000000067

[10] Data are as of 2018. For more information on the number of municipalities in Japan, see MIC, n.d. (in Japanese).

[11] Ministry of Finance, 2023. *Japanese Public Finance Fact Sheet. Part 2: Budget, pp. 45–52.* Throughout the report, the exchange rate of US$ 1 = ¥131.50 is used unless stated otherwise, that being the official exchange rate for the most recent year (2022) average made available by World Bank Open Data (https://data.worldbank.org/indicator/PA.NUS.FCRF?locations=JP)

Japan provides universal health care coverage: it ensures access to health services for all as a component of the constitutional requirement for the state to provide social welfare, social security and public health.[12] The social security scheme in Japan, developed dramatically after World War II, provides a "cradle to grave"[13] support and safety net to its citizens against conditions that lead to poverty, unemployment, injury, illness, premature death and aging. This involves pension schemes, health systems, social welfare for the elderly, family policy, policies for persons with disabilities, financial support for the poor and workers' protection. Public health, maternity and child health, and health insurance systems are among the health systems that safeguard every citizen's health.[14] For further information on Japan's health-related services and coverage please see section 3.

2.2 Japan's Demographics and Key Health-related Issues

Japan is known for having one of the world's most long-lived and healthiest citizenry. Life expectancy at birth (as of 2022) is 87.09 years for women and 81.05 years for men,[15] thus among the highest in the world. Additionally, Japan has the highest ***healthy life expectancy***[16] at birth, namely 75.5 years for women and 72.6 years for men (in 2019),[17] meaning that Japan indeed has the healthiest citizens in the world.

Meanwhile, the aging and shrinking population poses several challenges, including the sustainability of the health system. Japan has a population of more than 124 million,[18] which has been gradually declining since 2008.[19] Japan is also a 'super-aged' society with 1 in 10 people aged 80 years or older.[20] As of September 2023, elderly people aged 65 and over account for 29.1% of the total population. Furthermore, this number is expected to reach 34.8% by 2040.[21] The increasing demand for elderly care, driven by chronic diseases and age-related health conditions that often require longer-term care services, is putting unprecedented pressures on financial and human resources. Reforms are under way for Japan's health system to adapt to these changes. (Japan's health system evolution and challenges are further described in section 3).

[12] Article 25 of the Japanese Constitution enacted in 1947 states "All people shall have the right to maintain the minimum standards of wholesome and cultured living. In all spheres of life, the State shall use its endeavors for the promotion and extension of social welfare and security, and of public health." For more information see Prime Minister of Japan and his Cabinet, n.d.

[13] "Cradle to the Grave" was the slogan from Great Britain that has served as a guideline for social security policy in many countries, including Japan, since World War II. For more information, see MHLW, 2012a: *Annual Health, Labor and Welfare: Think about Social Security* (in Japanese).

[14] National Institute of Population and Social Security Research, 2019: *Population and Social Security in Japan.*

[15] MHLW, 2022a. *Life Expectancy for 2022* (in Japanese).

[16] Healthy life expectancy is defined as an average number of years that a person can expect to live in "full health". WHO, 2024.

[17] WHO, 2023. *World Health Statistics 2023 – Monitoring Health for the SDGs.*

[18] According to the Statistics Bureau of Japan: https://www.stat.go.jp/english/.

[19] Statistics Bureau of Japan, 2021.

[20] MIC, 2023a. *Statistics on the Elderly in Japan.*

[21] Ibid.

2.3 Disasters in Japan

Japan is a disaster-prone country, with repeated experience of building back from catastrophic earthquakes. Japan is situated in East Asia, consisting of four main islands, and geologically located at the convergence of the Pacific Ring of Fire and the Japan Trench, resulting in frequent earthquakes and volcanic activity. Notable past earthquakes include the 1995 GHAE with a magnitude of 7.3,[22] claiming around 6,400 lives,[23] and the 2011 GEJE, with a magnitude of 9.0-9.1, resulting in more than 22,000 fatalities or missing persons because of the unprecedented tsunami.[24] The 2016 Kumamoto Earthquakes, of which the largest event was magnitude 7.0, resulted in over 200 deaths and more than 2,600 injuries.[25] These earthquakes caused significant structural damage, including the collapse of buildings and landslides, leading to extensive devastation in Kumamoto Prefecture and surrounding areas. On January 1, 2024, a magnitude 7.4 earthquake and tsunami struck several cities and villages along the Noto Peninsula of Ishikawa Prefecture, resulting in more than 240 deaths and 1,000 injured. In addition to severe damage to housing and buildings—caused by the earthquake, tsunami, and associated fire—lifeline infrastructure was disrupted, including roads, electricity, water, fuel, and telecommunication infrastructure. This posed challenges and delays to evacuation, response and the recovery process, not least the medical response and health service provision.[26] See Box 1, Box 3 and Box 6, for more information on how Japan enhances the resilience of its health care facilities in the face of earthquakes and Tsunami.

Japan also faces climate-related risks, especially heavy rains and seasonal winds that result in floods and typhoons. The 1959 Isewan Typhoon, that caused thousands of casualties[27] led to the establishment of Japan's national level policy for disaster response, *the* ***Disaster Countermeasures Basic Act*** (DCBA) in 1961. Since then, the frequency and intensity of hydrometeorological disasters in Japan have been on the rise as a consequence of climate change. For example, several destructive floods and typhoons affected Japan in 2018 and 2019.[28] These events were ranked by Aon, a risk consulting firm, within the Top 10 Global Economic Loss Events for both years, causing US$ 23 billion in losses in 2018 and US$ 25 billion in losses in 2019.[29] Moreover, extreme heat has also become one of the major climate-related risks in Japan. The number of deaths from heatstroke has been increasing, with a recent yearly average of more than 1,000. For instance, in 2020, more than 1,500 people died from heatstroke, an extremely troubling fact, not least because that year fewer than 200 people died as a result of other disasters.[30] See Box 4 for an example of how a hospital carefully evaluated various flood protection options and ultimately chose the most cost-effective and suitable one.

[22] In this report, the Japan Meteorological Agency magnitude scale (see: https://www.jma.go.jp/jma/en/Activities/inttable.html) is used to indicate seismic intensity, rather than the Modified Mercalli Intensity (MMI) scale (see: https://www.usgs.gov/programs/earthquake-hazards/modified-mercalli-intensity-scale).
[23] Kobe City Fire Department, 2005. *Situation of Damage, 22 December 2005* (in Japanese).
[24] CNN, 2013. *2011 Japan Earthquake – Tsunami Fast Facts.*
[25] Cabinet Office, 2016a. *Kumamoto Earthquake* (in Japanese).
[26] Cabinet Office, 2020. *Damage caused by the 2020 Noto Peninsula Earthquake* (in Japanese).
[27] Cabinet Office, 2008. *1959 Ise Bay Typhoon Report* (in Japanese).
[28] Typhoon Jebi struck the Shikoku and Osaka regions in September 2018, leading to significant physical and financial damage. For more information, see **Verisk, 2018**.
[29] AON, 2018 and AON, 2019. *Weather, Climate & Catastrophe Insight* (2018 and 2019 Annual Reports).
[30] For more information, see: Ministry of the Environment, 2022. *Current Situation and Challenges of Heatstroke Prevention* (in Japanese).

Japan continues to gather data on disasters, review lessons learned, and integrate these findings into policy-making. The Cabinet Office of Japan develops an annual White Paper on Disaster Management[31] that reflects on the major disaster events that have occurred during the preceding year, together with an analysis of areas requiring further expansion and improvement of DRM. This White Paper also updates the list of Japan's major disasters since the GHAE in 1995, serving to maintain a centralized record of significant events while also raising disaster risk awareness to inform decision-making. Additionally, the Cabinet Office of Japan updates and makes available key Disaster Management reports and publications through its web portal,[32] including a comprehensive and updated overview of the Japanese disaster management system.[33]

2.4 Pandemics in Japan

Before COVID-19, Japan's recent history was marked by few pandemics. Its last previous major outbreak of infectious disease was in 1918—the co-called Spanish Flu—with approximately 23 million people infected and 390,000 deaths.[34] In 2003, Japan prepared for the SARS outbreak response, and like many other countries, implemented measures including travel advisories, increased surveillance, and quarantine procedures in response to the global outbreak.[35] Thanks to effective responses, including border control measures, no domestic outbreak was reported. Nevertheless, this experience compelled Japan to develop new standards and guidelines to strengthen defense against airborne pathogens.[36] Similarly, in 2009, Japan effectively responded to the H1N1 influenza pandemic through vaccination campaigns and public awareness programs that enabled it to contain the spread of the virus domestically.

Japan, like many nations, faced its most severe pandemic challenge in modern times with COVID-19. Japan was one of the first countries to experience this virus, confirming its first domestic case of infection in January 2020, followed in February by an outbreak on a cruise ship from abroad. Since the first Declaration of State of Emergency in March 2020, Japan issued a total of three such declarations during 2020–2021 with a noncompulsory self-restraint requirement[37] during the peak of infections. Social distancing, testing, and contact tracing were in place, schools were closed and transitioned to online classes, and nonessential businesses were requested to be closed or to shorten their business hours.

COVID-19 was legally classified as a designated infectious disease under the *Infectious Disease Control Act* from February 1, 2020. This allowed the government to provide the medical expenses of hospitalization of infected patients, vaccinations, as well as financial support for businesses, including cash payments and emergency loans for businesses and workers, and cash payments to households (and various consumption promotion campaigns, to mitigate the general

[31] Cabinet Office, n.d.1. *White Paper on Disaster Risk Management.*
[32] The Cabinet Office's web portal on Disaster Management reports and brochures can be accessed at: https://www.bousai.go.jp/kyoiku/panf/report_brochure_etc.html.
[33] Cabinet Office, 2021a. *Disaster Management in Japan.*
[34] Home Ministry of Japan, Health Bureau, n.d. *National Diet Library Digital Collections* (in Japanese).
[35] MHLW, 2004a. *Measures against SARS this Winter* (in Japanese).
[36] For example, the *Severe Acute Respiratory Syndrome (SARS) Management Guidelines* recommend patient isolation, use of masks, and health care worker precautions, among others. See (in Japanese) MHLW, n.d.3, and Asano, 2003.
[37] Japan's legal framework for emergencies, particularly public health crises, is unique. The government does not have the legal authority to enforce strict lockdowns. Instead, it relies on "self-restraint" (jishuku), where citizens and businesses are requested to voluntarily comply with certain measures, such as closing businesses, reducing travel, or staying home. See Borovoy, 2022.

◀ June 10, 2020— Crowd of people with face masks in Shibuya crossing, Tokyo, during the COVID-19 emergency. Photo: Fiers / istock.com

economic downturn). Japan's basic policy for COVID-19 focused on minimizing peak infection numbers, and prioritizing care for the severely ill while maintaining the medical system, and precluding the meltdown of health systems. Medical resources were thus prioritized for the most vulnerable populations. Hospital beds and at-home care were allocated according to the severity of symptoms, and the elderly received the first available batches of vaccines.[38] In 2020 alone, it is estimated Japan allocated around 77 trillion yen (US$ 85.6 billion) for COVID-19 response, or 610,000 yen (US$ 4,639) per capita.[39]

Japan was able to maintain relatively low numbers of fatalities from COVID-19 compared to other countries,[40] despite relatively loose restrictions.[41] Several cultural, health, and policy factors may be cited here, including mask wearing,[42] hand washing, the custom of not shaking

[38] For more information, see Karako *et al.*, 2022. *COVID-19 in Japan during 2020–2022: Characteristics, Responses, and Implications for the Health Care System*, Journal of Global Health 12.

[39] Calculated from the COVID-19 response budgets from the three supplementary budgets (April 2020, June 2020, and January 2021), approved in Japan's FY2020. A portion of the supplementary budget is also earmarked for disaster prevention and mitigation, national resilience, etc. For more information, see Headquarters for the Promotion of Administrative Reform Cabinet Secretariat (available in Japanese at: https://www.gyoukaku.go.jp/review/database/index.html), and NHK "#Your Corona Budget"(available in Japanese at: https://www3.nhk.or.jp/news/special/covid19-money/).

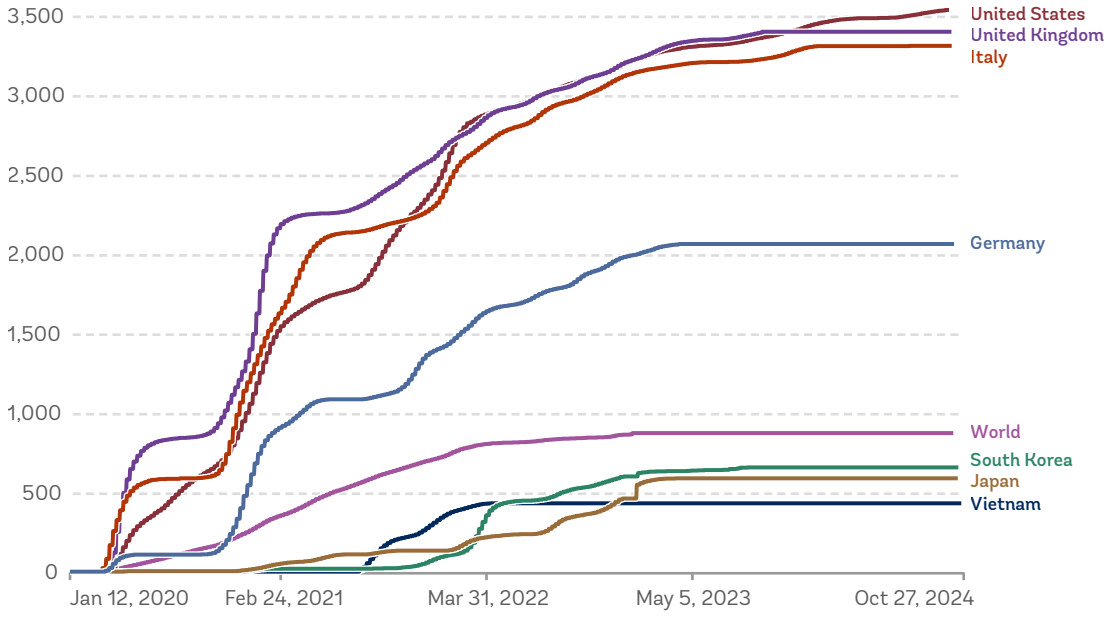
[40] Okina, 2021. *Characteristics and Issues of Japan's Response to COVID-19 — An International Comparison*. Japan Foreign Policy Forum.

[41] According to research by Johns Hopkins University (2023), as of March 2023, Japan had 0.2 deaths per 100 confirmed COVID-19 cases (observed case-fatality ratio of 0.2%) and 57.72 deaths per 100,000 population. This is lower than in other OECD countries such as the United States, United Kingdom, etc.

[42] The practice of wearing face masks, especially during the winter and spring months of high flu and hay fever seasons, as a matter of etiquette, especially when coughing is common. Research has pointed to the Spanish flu as the origin for this now standard public health practice in Japan. Many have credited Japan's lower COVID-19 death toll, compared to Western nations, to the country's cultural affinity for wearing face masks. For more information, see Kawana, n.d. *Spanish Influenza*, and CAICM, 2023.

hands or hugging, a low prevalence of obesity, and the existence of local public health centers (PHCs) (see section 3.1). In the interests of global preparation for the next pandemic, Japan's relatively low fatality figures certainly warrant an in-depth review of the combined efforts of the Japanese government, medical institutions, and society, to pinpoint the key lessons to be derived from Japan's COVID-19 response. Figure 2.1 shows COVID-19 deaths per million people in several countries over the relevant period, including Japan (the shallowest curve on the graph).

Figure 2.1 Cumulative COVID-19 Confirmed Deaths (per million people).



Source: WHO, 2024a.

3

Japan's Health System

3.1 Health Services in Japan

Comprehensive and quality health services are accessible by all in Japan. As stated in *the Medical Care Act*, medical care in Japan is provided by "physician/doctors, dentists, pharmacists, nurses, or other medical care professionals [...] in hospitals, clinics, long-term care health facilities, integrated facilities for medical and long-term care, dispensing pharmacies, and other facilities that provide medical care, and in the homes of medical care recipients".[43] That applies to all health care providers, both public and private facilities. The Japanese health system aims to address a broad spectrum of health care needs from preventive services to acute and long-term care. Key services include:

- **Medical Consultations and Treatment**: Citizens in Japan have universal access to medical consultations and treatment from a variety of health care providers, including general practitioners, specialists, and hospitals, regardless of their insurance type.
- **Emergency Care**: Emergency medical services are available for urgent medical situations. Ambulance services are well-established, and emergency care is provided in hospitals throughout the country. Emergency care plays a critical role during disasters and infectious disease outbreaks, given that emergency care professionals such as paramedics are naturally at the frontlines of lifesaving treatment and care for the severely injured or unwell. Hospital emergency rooms in badly affected areas are bound to face a surge of patients during disasters and pandemics.
- **Preventive Care:** This is emphasized in the Japanese health care system. Regular health check-ups and screenings are common, aiming to detect and address health issues at an early stage.
- **Maternity and Child Health Services:** Maternity care, including prenatal and postnatal services, is readily available. Child health services include vaccinations and routine check-ups from birth onward. Since 2023, the Children and Families Agency established under the Cabinet Office has comprehensively overseen these activities.
- **Long-Term Care for the Elderly:** Given its aging population, Japan has developed a robust long-term care system. Services include home care, nursing homes, and rehabilitation services to support individuals with chronic illnesses or disabilities.

[43] *Medical Care Act* 1948 Article 1-2: https://www.japaneselawtranslation.go.jp/en/laws/view/4006#je_ch1.

- **Mental Health Services:** These are an integral part of the health care system in Japan. Psychiatric care is available, and efforts are made to reduce the stigma associated with mental health issues.
- **Dental Care:** This too is included in the Japanese health care system, involving regular dental check-ups, treatments, and oral health education.

Clinics and hospitals are the main health care facilities in Japan, where primary care is mainly provided at clinics, most of which are privately owned. Japan distinguishes between hospitals and clinics based on capacity (number of beds) and the type of care they provide.[44] A clinic in Japan is defined as a medical facility with 19 beds or less, catering primarily to patients with minor or chronic illnesses and injuries, and often specializing in particular fields like internal medicine or obstetrics-gynecology. Hospitals, on the other hand, are larger facilities providing a broader range of services and are equipped to handle more severe or complex medical conditions. Hospitals offer both acute and long-term care, and are about 15% nationally or publicly owned,[45] and the rest are private and nonprofit.

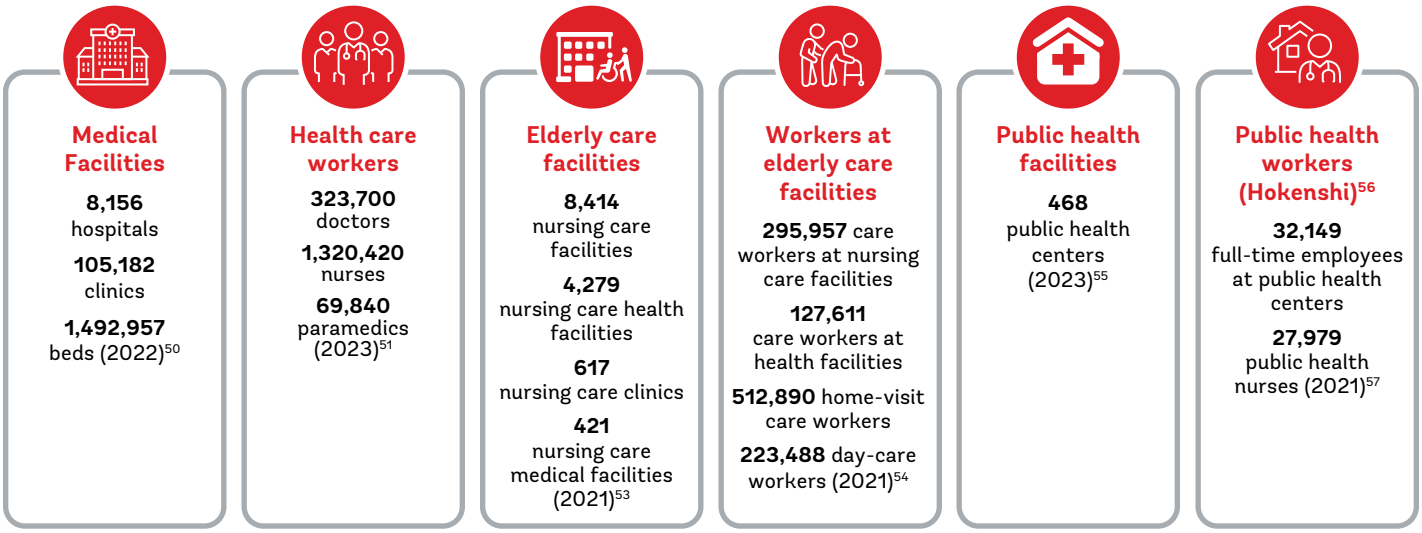
Given the rapidly aging population, facilities and services providing long-term care for the elderly are also significant health care providers in Japan. Under the ***Long-Term Care Insurance Act*** (LTCI), enacted in 1997, medical services for citizens aged 65 and older, and younger people (ages 40 to 64) who have selected disabilities are cared for under the LTCI. It supports eligible individuals with age-related issues such as dementia, mobility impairments, or chronic disease. The system offers various services to assist elderly and disabled individuals in their homes, at facilities such as nursing homes, and in the community at small-group homes, and so forth.[46] Services offered include nursing care, help with daily activities like bathing, dressing, and meal preparation, rehabilitation, and medical care, as well as facility services such as care for bathing, toileting, eating, and so forth at special nursing homes for the elderly. As shown in Figure 3.1 diverse types of elderly care facilities exist in Japan, many staffed by health care professionals including doctors and nurses.

Public health centers (PHCs)[47] are local government entities tasked with overseeing public health. The PHCs' roles, as outlined in *the* ***Community Health Act***,[48] encompass a wide range of public health responsibilities.[49] These include sharing and enhancing community health information, managing vital and other health statistics, improving dietary conditions and food sanitation, and ensuring environmental sanitation, which covers aspects like housing, water supply, sewage, waste disposal, and public cleaning. Additionally, PHCs handle medical and pharmaceutical affairs, oversee public health nurses, and promote and improve public health services. Their responsibilities also extend to maternal, child, and elderly health, dental health,

[44] MHLW, 2010. *Classification of Medical Facilities in Japan* (in Japanese).
[45] Includes nationally owned and other publicly owned hospitals, including those of Prefectures, municipalities, local independent administrative agencies, Japan Red Cross, Saiseikai, Hokkaido Social Work Association, Welfare Federation, and National Federation of Health Insurance Organizations. For more information, see MHLW, 2021a: *Current Status of Health Care Delivery System* (in Japanese).
[46] JICA, 2022. *Community-Based Integrated Care in Japan – Suggestions for Developing Countries from Cases in Japan.*
[47] Known as "*hokenjo*" in Japanese.
[48] Community Health Act: https://www.japaneselawtranslation.go.jp/en/laws /view/4411
[49] See JMA, 2021. *Various Tasks of Public Health Centers | DOCTOR-ASE: Information Media for Medical Students to Think about the Future of Medicine* (in Japanese).

psychiatric health, and the care of patients with long-term, incurable diseases. A significant aspect of their work is the prevention of infectious diseases and conducting laboratory tests related to sanitation and the environment (see section 4.5).

Figure 3.1 **Key Japanese Health Service Statistics (nationwide totals).**



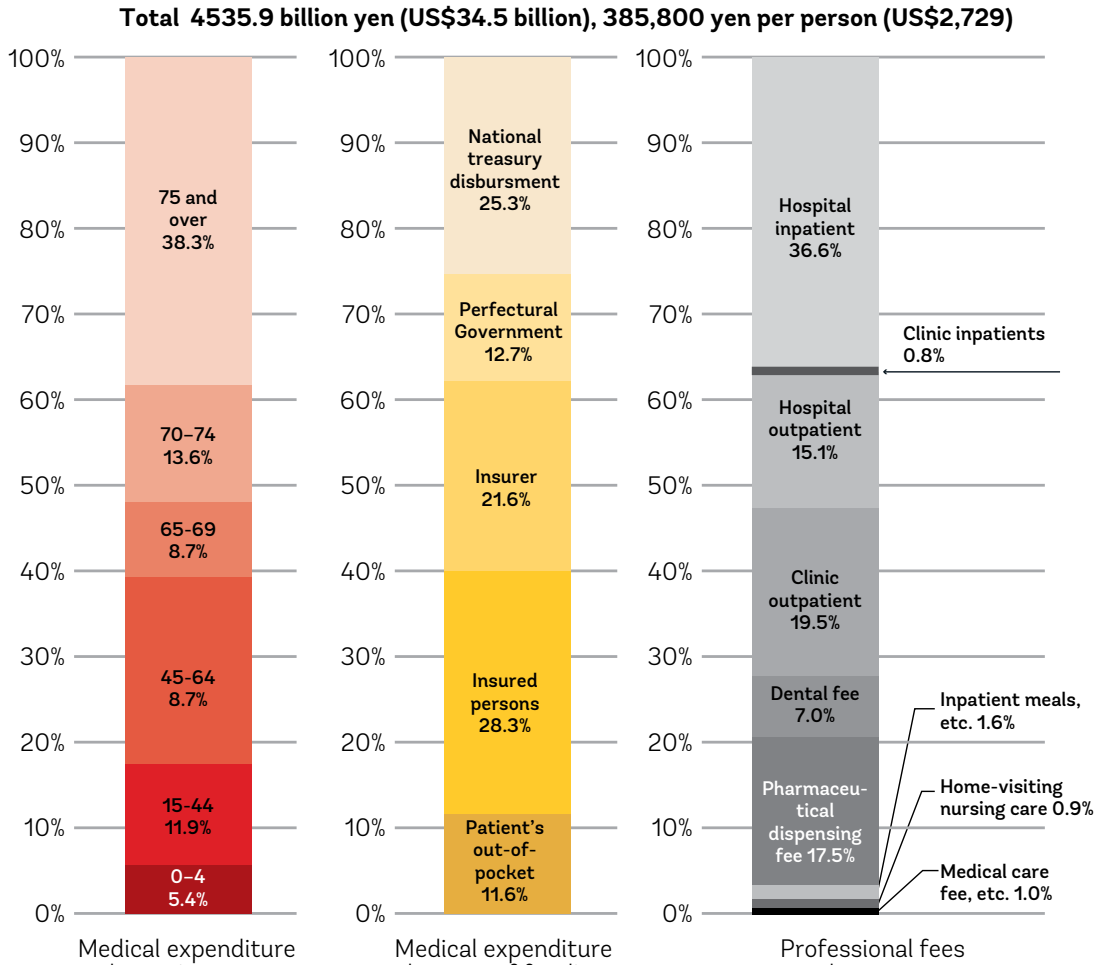
Source: Developed by authors based on information from MHLW and OECD (*see references)*

3.2 Finance and Insurance

Japan's health care expenditure is on the rise, totaling approximately 45.4 trillion yen (US$ 345 billion), or 358,800 yen (US$ 2,729) per capita, accounting for 8% of the country's GDP in 2021 (see Figure 3.2).[58] Almost half (50%) of these costs are sourced from insurance premiums[59], and the rest are from national and local government funds (38%)[60] and patients' co-payments (12%). By treatment type, medical treatment costs at hospitals and clinics were highest (72%), mostly for outpatient care (72%).[61] The majority of expenses were for patients age 65 and over (61%), followed by ages 45–64 (22%), 15–44 (12%), and 0–14 (5%).

50 MHLW, 2024a. Annual Health, Labor, and Welfare Report 2024 (in Japanese).
51 MHLW, 2023a. Medical Provision System (in Japanese).
52 OECD, 2023. Health at a Glance 2023 (OECD Indicators).
53 MHLW, 2021b. Overview of nursing service facility/business establishment surveys (in Japanese).
54 Ibid.
55 MHLW, 2023a.
56 In Japan, public health workers called "Hokenshi" play a critical role to ensure that residents with health issues can continue living in their communities. They coordinate various services such as health care, medical care, welfare, and nursing care comprehensively. Additionally, they strive to identify gaps in services and build a community care system. For more information see MHLW, 2013a (in Japanese).
57 MHLW, 2023a.
58 MHLW, 2021c. *Overview of National Medical Expenses in FY2021* (in Japanese).
59 9,737.6 billion yen (21.6%) was paid by business owners, and 12,758.1 billion yen (28.3%) was paid by insured persons. For more information, see MHLW, 2021c.
60 National treasury accounted for 11,402.7 billion yen (25.3%), and local governments accounted for 5,699.8 billion yen (12.7%). For more information, see MHLW, 2021c.
61 Other treatments included dental treatment (7.0% or 3,147.9 billion yen—US$ 23.9 billion), pharmacy dispensing (17.5% or 7,879.4 billion yen—US$ 59.9 billion), and home-visit nursing (0.9% or 392.9 billion yen—US$ 2.99 billion), etc. For more information, see MHLW, 2021c.

Figure 3.2 **Japan's Health Care Expenditure in 2021**



Source: Adapted from MHLW, 2021d. *About National Medical Care Expenditure and Component Ratio* (in Japanese).

Since 1961, Japan has provided health care coverage to almost all its citizens by mandating enrollment in the Statutory Health Insurance System (SHIS) through either an employment-based or residence-based health insurance plan.[62] In 1922, the Statutory Health Insurance System (SHIS) was first introduced, through the ***Health Insurance Act***,[63] laying the foundation for achieving universal health care coverage in 1961.[64] Residence-based plans are offered by each prefecture and include insurance plans for nonemployed individuals (age 74 and under), and a separate plan for the retired elderly (age 75 and older).[65] The SHIS system is financed by a combination of taxes, mandatory individual contributions, and out-of-pocket charges. In general, citizens pay 30% of total costs to access health care coverage. However, individual contributions vary based on age and income. Specifically, young children and low-income older adults benefit

[62] Matsuda, 2020. *International Health Care System Profiles: Japan*, Commonwealth Fund.
[63] Health Insurance Act: https://www.japaneselawtranslation.go.jp/en/laws/view/3266/en
[64] Japan Health Policy NOW, n.d.1. *Health Insurance System.*
[65] Matsuda, 2020.

from lower co-pay rates. The system has both annual and monthly out-of-pocket maximums to further alleviate financial burdens on low-income households.[66]

Hospitals and clinics in Japan operate within the financial framework of the SHIS.[67] They submit their claims to the National Insurance Bodies, which review the services rendered against a national fee schedule. This determines the amount that medical facilities can charge for each service, ensuring nationwide uniformity in billing. The system is designed to check the accuracy of those claims to prevent overcharging. Hospitals and clinics are reimbursed from the insurance system, which, as mentioned above, is a mixture of government subsidies, individual contributions, and out-of-pocket payments by patients. This structured approach streamlines the billing process and helps to keep the health care costs transparent and controlled. Private and public hospitals share the same basic medical reimbursement process. Various types of insurance, such as national health insurance[68], employee pension insurance, and long-term care insurance, may be involved in the reimbursement of medical expenses, with only minor differences in procedures depending on the type of insurance (see Table 3.1).

Since 2000[69] Japan offers medical care for the elderly through the Long-Term Care Insurance System (LTCI). The basic concepts behind the LTCI are threefold: 1) support for the independence of elderly people, rather than simply providing personal care; 2) a user-oriented system in which the user can receive integrated health, medicine, and welfare services from diverse agents based on their own choice; and 3) a social insurance system where the relation between benefits and burdens is clear.[70] Insurers for the LTCI are primarily municipalities, with benefits and premiums managed at the local level. The main sources of the financing are from tax (including municipal, prefectural, and national government tax) and premiums on a 50:50 basis respectively; while user co-pay is 10–30%, depending on income.[71]

66 MHLW, n.d. *About the Consultation Service for the Percentage of the Cost to be Borne by Patients* (in Japanese).
67 JMA, 2013. *Premium Benefit Structure* (in Japanese).
68 A residence-based insurance primarily for those who are not covered by employer-based plans. It is aimed at the self-employed, retirees, students, and farmers. It is administered by local governments or the Japan Health Insurance Association's local government branches and relies on household income to determine premiums. See Japan Health Policy NOW, n.d.1. and National Health Insurance Association, n.d.
69 Tokyo Metropolitan Government, 2017. *Outline of the Long-Term Care Insurance System.*
70 MHLW, 2016a. *Long-Term Care Insurance System of Japan*, Health and Welfare Bureau for the Elderly.
71 JICA, 2022.

3.3 Key Regulations

Several regulations related to the health systems exist in Japan; these apply to health care providers, insurance, and public health respectively. Key regulations are explained in Table 3.1.

Table 3.1 Key Regulations Related to Health Services in Japan

1) Regulation of health care providers		
Regulation	**Objectives**	**Key Contents**
Medical Care Act[72] **(1948)**	Regulates the establishment and operation of medical institutions, ensuring patient safety and quality medical care. Mandates for prefectures to provide Medical Care Plans to ensure medical care delivery system is in place at the prefectural level in accordance with the needs and conditions in the area.	Standards for establishing and operating medical institutions, rules for medical provision. ***Basic policy*** for ensuring medical care delivery system and requirements for prefectural governments to establish a ***Medical Care Plan*** in accordance with the basic policy (Article 30).
Medical Practitioners Act[73] **(1948)**	Defines qualifications and duties of physicians, ensuring the provision of appropriate medical care.	Requirements for physician qualifications, licensure, scope of work, and continuing education.
2) Regulation of health insurance		
Regulation	**Objectives**	**Key Contents**
Health Insurance Act[74] **(1922)**	Ensures the provision of medical services for working people and reduces the burden of medical expenses.	Eligibility requirements, methods of premium collection, benefits (treatment costs for illness, injury, etc.).
National Health Insurance Act[75] **(1958)**	Provides medical services to citizens not covered by employee health insurance, such as the self-employed and retirees.	Eligibility requirements, premium collection, benefits (subsidies for medical expenses, etc.).
Long-term Care Insurance Act[76] **(1997)**	Ensures the provision of care services for the elderly and disabled.	Eligibility for care services, types of services, methods of benefits.
3) Regulation of public health		
Regulation	**Objectives**	**Key Contents**
Community Health Act[77]**(1947)**	Aims to improve public health and prevent/manage diseases.	Standards and regulations for sanitary management, infectious disease control, environmental health, etc.

Source: Elaborated by authors from different sources (*see references*).

[72] Medical Care Act: https://www.japaneselawtranslation.go.jp/en/laws/view/4006
[73] Medical Practitioners Act: https://www.japaneselawtranslation.go.jp/en/laws/view/3992
[74] Health Insurance Act: https://www.japaneselawtranslation.go.jp/en/laws/view/3266/en
[75] National Health Insurance Act: https://www.japaneselawtranslation.go.jp/ja/laws/view/2453
[76] Long-Term Care Insurance Act: **https://www.japaneselawtranslation.go.jp/ja/laws/view/3807**
[77] Community Health Act: https://www.japaneselawtranslation.go.jp/en/laws/view/4411

3.4 Key Actors

At the national level, the **Ministry of Health, Labour and Welfare (MHLW)** is responsible for the overall design and oversight of the policies and regulations related to health care, insurance, long-term care, and public health in Japan. Within MHLW, the **Health Policy Bureau** oversees and guides the Regional Health Care Plan development in prefectures, the **Health Service Bureau** is responsible for disease control, the **Health and Welfare Bureau for the Elderly** oversees and guides LTCI Planning at the municipality level, and the **Health Insurance Bureau** is responsible for planning and developing medical insurance systems such as health insurance, seafarers' insurance, and national health insurance, as well as medical care systems for the elderly.[78]

The **Social Security Council** and **Central Social Insurance Medical Council** provide policy advice to MHLW through conducting research on key health care related issues. The **Social Security Council**, comprising academic researchers and medical professionals' associations, deliberates important matters related to health care services including the basic system of medical insurance (functioning as an advisory body to MHLW).[79] The **Central Social Insurance Medical Council** provides counsel to the Health Minister on matters related to health insurance and services. Composed of representatives from the payer sector, provider sector, and the public interest, the council's primary role is to deliberate and establish revisions in the fee schedules for medical services and pharmaceuticals.[80]

Prefectures play a key role in implementing national regulations, managing residence-based insurance, and developing regional health care delivery networks. Under the ***Medical Care Act***, Prefectures are mandated to develop and regularly update ***Regional Medical Care Plans***. Prefectures are also responsible for managing public health centers, which are at the forefront of sanitation, disease prevention, and addressing environmental concerns.[81] Prefectures also support municipalities in the provision of statutory health insurance, providing guidance on financial management and strategy setting.

Municipalities are involved in the operation of statutory health insurance, making health care accessible to citizens. Municipalities also organize health promotion activities for their residents[82] and assist prefectures with the residence-based insurance plans.[83] For the LTCI, as the insurer, municipalities manage benefits and premiums.

The Japan Medical Association (JMA) is a national academic and professional organization with approximately 176,000 members[84]. Founded in 1916, it brings together independent corporate organizations at the prefectural level. Together with other major medical associations, such as the **Japan Nursing Association**, the **Japan Hospital Association**, and the **Japan Pharmaceutical Association**, the JMA carries out a wide range of activities including participation in advisory committees for health care policy-making, advancement of medical ethics, the improvement of

[78] MHLW, 2017. *Organization Chart.*
[79] MHLW, 2001. *About the Social Security Council* (in Japanese).
[80] Japan Health Policy NOW, n.d.2. *Health Policy Players.*
[81] Ibid.
[82] Ibid.
[83] Union of Kansai Governments, n.d. *Current Status of the Division of Roles between the National and Local Governments in the Health Care System* (in Japanese).
[84] As of December 2020. For more information, see JMA website: https://www.med.or.jp/english/about/overview.html

medical education, the comprehensive advancement of medicine and related sciences, and lifelong education. Since 2011, JMA has established and dispatched its **Japan Medical Association Teams (JMATs)**. Coordinating with the MWLW-led **Disaster Medical Assistance Teams (DMATs)**, which tackle acute-stage disaster medical care, JMATs normally enter the disaster-stricken areas three days after the precipitating event, and provide more medium- to long-term support—to evacuation shelters and local medical care—until the local medical system recovers.

3.5 Quality Infrastructure Supporting Health Systems

Health care facilities are defined as critical lifeline infrastructure, albeit naturally dependent on other lifeline infrastructure, such as transportation, water, power, energy, and ICT, for service delivery and resilience in the face of disasters. Disasters caused by earthquakes, typhoons and floods can disrupt health care services by damaging hospitals, other vital buildings, and equipment. Pandemics, on the other hand, typically do not hit infrastructure in that way. Nevertheless, an infectious disease outbreak can disrupt lifeline services, including medical care, due to shortages of human and other resources, and restrictions. For example, during the pandemic, some medical workers found it difficult to get to work owing to reduced public transport. Additionally, many medical facilities prioritized and set restrictions on the type of medical services accessible by patients during peak outbreak, limiting care only to essential, life-threatening medical services. This section provides an overview of health care facilities and their supporting lifeline infrastructure in Japan, focusing mainly on their resilience against disasters.

In terms of the impact of earthquakes on health facilities, during the ***1995 Great Hanshin Awaji Earthquake***, medical facilities in Hyogo Prefecture[85] were physically damaged, and even those that escaped structural harm faced a significant reduction in their capacity to provide medical services due to disruptions of water, power, gas, and phone lines, and damage of various sorts to medical equipment. Shortage of water hindered vital medical treatment, such as dialysis. Power outages meant that medical procedures had to go ahead without sufficient lighting, sometimes requiring staff to manually ventilate patients. Lack of gas temporarily halted hospital meal services. Advanced medical equipment (X-ray and MRI machines) was severely damaged and became unusable. In the initial phase, doctors, nurses and other medical staff were themselves disaster victims, and unable to come to work. Therefore, many hospitals suffered serious staff shortages precisely at the moment when they needed to handle a surge in demand. Transport disruption also had a significant toll on post-disaster medical response. For example, the Kobe City Central Citizens Hospital, the premier tertiary emergency medical institution in Hyogo Prefecture, was unable to accept many emergency patients immediately after the earthquake due to the closure of the Kobe Ohashi Bridge.[86] While some lifeline infrastructure services such as power and phone lines were restored within days and weeks, others such as gas, water and sanitation, and roads required months, if not years for repair.[87]

[85] In Hyogo Prefecture, highly affected by the GHAE, four hospitals and 101 clinics were reported to be completely destroyed or burned down. For more information, see Cabinet Office, n.d.2 (in Japanese).

[86] Cabinet Office, n.d.2. *Collection of Lessons Learned from the Great Hanshin-Awaji Earthquake [02] Medical Institutions in Disaster-Affected Areas* (in Japanese).

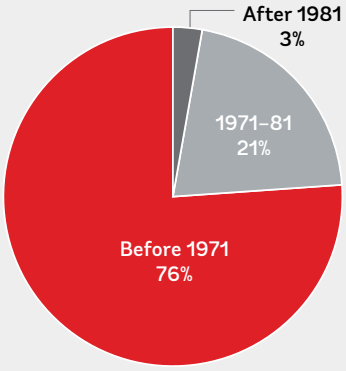
[87] The estimated lifeline infrastructure restoration time after GHAE in Kobe City included: power—six days; gas—84 days; water supply services—90 days; sanitation services—93 days; telephone lines—14 days; road and rail—39 to 622 days). For more information, see Kobe Shimbun, 2014 (in Japanese).

Box 1. Setting Standards for Earthquake-Resilient Hospitals

Proactive policies to set seismic standards combined with financial and technical support for implementation can facilitate the adoption of rapid seismic retrofits of hospital buildings.

Japan has been setting standards to increase the earthquake resilience of hospitals over the years. **In 1950**, the ***Building Standard Act***[88] set the minimum standards for building designs, and has been updated several times, integrating lessons learned from disasters. **In 1981**, major revisions were made, following the 1978 Miyagi Earthquake,[89] significantly reducing the risk of collapse[90] (Figure B.1.1).

Figure B.1.1 Buildings collapsed in the 1995 Kobe earthquakes by year of construction.



Source: Ranghieri and Ishiwatari, 2014

In 2006, the ***Basic Policy to Promote Seismic Diagnosis and Retrofitting of Buildings*** [91] emphasized that hospitals must enhance their earthquake resilience.

The ***Act on Promotion of Seismic Retrofitting of Buildings***[92] (**2013**) obliges large-scale buildings constructed before 1981 that are used by many people, such as hospitals, to undergo seismic inspections.[93] MHLW regularly conducts surveys to estimate the compliance rate of Disaster Base Hospitals adopting seismic-resistant structure designs, and provides subsidies to support retrofits in medical institutions.[94] As a result, **in 2022**, 95.4% of Disaster Base Hospitals and emergency medical centers, which serve as medical bases in the event of disasters including an earthquake, were converted to seismic-resilient structures, and 79.5% of private hospitals and clinics were adopting seismic-resilient designs[95] for which MLIT also provides subsidies for seismic retrofitting.[96] In addition, research on seismic resilience technologies specific to critical facilities including hospitals are conducted in collaboration between the National Research Institute for Earth Science and Disaster Resilience (NIED) and the Ministry of Education, Culture, Sports, Science and Technology (MEXT)[97]—See an example in Box 3.

In terms of the impact of floods on health facilities, during the ***2018 heavy rains*** that caused river flooding and landslides impacting more than 10 prefectures in southwestern Japan, approximately 95 medical facilities were affected by flooding, power outages and water service disruptions at their hospitals and clinics.[98] In Mabi District, Kurashiki City, Okayama Prefecture, one of the most devastated areas due to a levee break that led to more than 50 deaths, the Mabi Memorial Hospital was inundated up to its first floor ceiling. More than 300 patients and workers were temporarily trapped within the hospital building unable to access lifeline infrastructure services. However, thanks to the quick rescue and emergency transport efforts provided by the

[88] Building Standards Act: https://www.japaneselawtranslation.go.jp/ja/laws/view/4024
[89] See Cabinet Office, n.d. (in Japanese).
[90] Moullier and Sakoda, 2018. *Converting Disaster Experience into a Safer Built Environment.*
[91] MLIT, 2006 (in Japanese).
[92] Act on Promotion of Seismic Retrofitting of Buildings (in Japanese): https://laws.e-gov.go.jp/law/407AC0000000123
[93] MLIT, 2019a. *Outline of Act on Promotion of Seismic Retrofitting of Buildings* (in Japanese).
[94] MHLW, 2012b. *Results of Survey on Seismic Retrofitting of Hospitals* – 24 Aug. 2012 (in Japanese).
[95] MHLW, 2023b. *Results of a Survey on the Status of Seismic Retrofitting of Hospitals* – 10 Oct. 2023 (in Japanese).
[96] MLIT, 2024. *Support Systems for Seismic Resilience of Houses and Buildings (FY2024)* (in Japanese).
[97] NIED, 2008. *Press Release: Conducting a Shaking Table Experiment to Evaluate the Functional Preservation of Critical Facilities* (Medical Facilities) in the Event of an Earthquake Disaster (in Japanese).
[98] MHLW, 2018a. *Damage Caused by the Heavy Rains of July 2018* (in Japanese).

Self Defense Force, Fire and Disaster Management Agency (FDMA), and DMAT, there were no casualties during that temporary period of isolation.[99] Lifeline infrastructure in Mabi City was eventually restored, including power within five days, water supply within two weeks, and medical services within 10 days (resumed provisionally from vehicles). See Box 4 and Box 7 for how this flood event in Mabi encouraged other hospital and wide stakeholder groups in the region to invest in and improve the resilience of their facilities and Business Continuity Plan for the region.

Learning from these past disaster experiences, Japan advocates for quality infrastructure investments within Japan, and leads globally, promoting the importance of the resilience of critical infrastructure including health systems—through structural and nonstructural measures.[100] In Japan, such a combination of structural and nonstructural measures enhances the disaster resilience of health care facilities, as well as other lifeline infrastructure essential to the delivery of health care services. To date, the key focus here has been earthquakes. However, increasing flood events and COVID-19 have further catalyzed and accelerated efforts to implement multihazard measures to strengthen the resilience of critical infrastructure, including health care alongside its supporting lifeline infrastructure.

Box 2. Emergency Roads to Health Facilities

Transport infrastructure that connects critical facilities such as hospitals plays a key role for smooth emergency response during disasters.

Emergency Transport Roads (ETRs) in Japan, known as "lifeline roads," are a critical component of the country's infrastructure, particularly in times of disasters like earthquakes, tsunamis, or typhoons. In MLIT's definition,[101] these are important routes that should be maintained for emergency vehicles carrying out evacuation, rescue, supply of goods, and other emergency activities immediately after a disaster. ETRs are designated as such by prefectures and include national expressways, national highways under jurisdiction of MLIT, national highways under jurisdiction of prefectures, prefectural roads, and municipal roads. Given that hospitals serve as a critical hub for post-disaster medical care, the resilience of the transportation networks, like the resilience of the buildings themselves, is of critical importance for patients who need to reach a hospital. Therefore, it is fundamental that arterial roads leading to Disaster Base Hospitals remain accessible.

The Tokyo Metropolitan Government has designated certain lifesaving routes as the highest priority roads, because they connect Disaster Base Hospitals for disaster relief, the bases of rescue and relief organizations in Tokyo, and the operation bases of support units from outside Tokyo. The Tokyo authorities plan to reinforce not only land routes, but also water routes utilizing rivers and ports, and roads known as the "last mile" that connect Disaster Base Hospitals and trunk roads. Additionally, having put in place pre-arranged cooperation arrangements with local construction contractors, the government has established a mechanism to enable immediate restoration of critical infrastructure in the event of a disaster.[102]

[99] Murakami, 2021. *The Medical Provision System to Protect Life – from the Experience of the 2018 Western Japan Heavy Rain* (in Japanese).

[100] "Quality infrastructure" is "resilient," against disasters and other risks, "inclusive," leaving no one behind, and "sustainable," taking into account its impact on society and the environment. In order to achieve quality infrastructure investment, the "G20 Principles for Quality Infrastructure Investment" were drafted in the G20 process in 2019, and endorsed at the Osaka Summit in June of the same year. For more information, see MoFA, 2023.

[101] MLIT, n.d. (in Japanese).

[102] Tokyo Metropolitan Government, n.d.1. *Basic Policy for Securing Emergency Transportation Routes in the Event of a Disaster (summary)*(in Japanese).

For earthquakes, since 2013, under the revised ***Laws Concerning the Promotion of Seismic Retrofitting of Buildings***, all major buildings including hospitals and clinics, evacuation centers, and buildings alongside emergency transport roads are mandated to conduct and report the results of seismic diagnostics of their buildings. As of 2022, 79.5%[103] of hospitals and 95.4%[104] of the designated Disaster Base Hospitals were compliant with Japan's seismic standards.[105]

Box 3. Seismic Base Isolation for Hospitals, an Example of Seismic-Resilient Technology

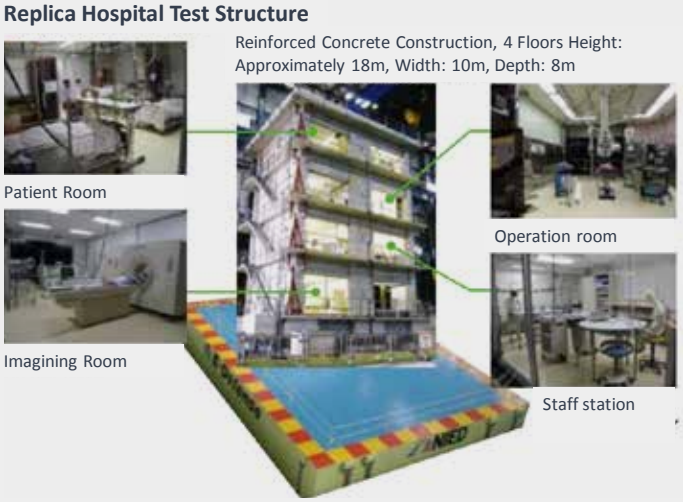
Japan leverages a combination of several measures to improve the seismic resilience of medical facilities.
A number of hospital buildings in Japan are adopting a seismic base isolation system, which reduces the transmission of earthquake vibrations to buildings by installing seismic isolators beneath the superstructure of the foundation to absorb earthquake-induced ground motion (Figure B.3.1). Because a seismically isolated building is less likely to be shaken by the transmission of earthquake vibrations, damage to the building—and its people and equipment—can be avoided.[106] As a result, a base isolation system allows critical medical facilities to recover more quickly after an earthquake, helping to ensure continued operation.

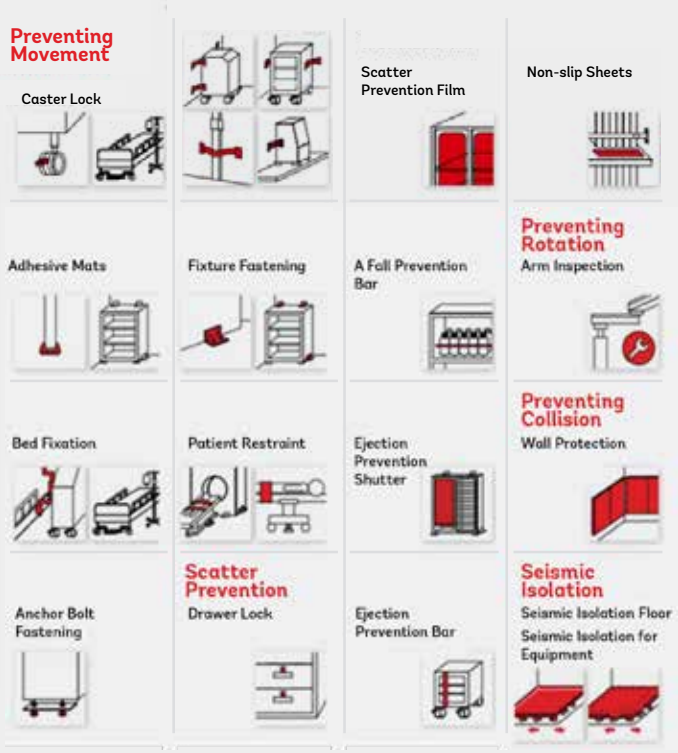
Figure B.3.1 A Seismic Base Isolation System.

As an example, the National Research Institute for Earth Science and Disaster Resilience (NIED)[107] conducted a shaking test in E-Defense, the world's largest shake table, on a full-size model simulating a four-story hospital building (Figure B.3.2.a), to determine the performance of countermeasures for the interior of these buildings (Figure 3.B.2.b) in order to more effectively reduce injury to people and damage to medical equipment.

Source: Kobe City Medical Center General Hospital, n.d.

Figure B.3.2 a) (left) Shaking Test with Hospital Mock-up; b) (right) Measures to strengthen earthquake resilience in the interiors of base isolated hospitals.





Source: NIED, 2011.

[103] 6,425 out of 8,085 hospitals. For more information, see MHLW, 2023b.
[104] 742 out of 778 hospitals. For more information, see MHLW, 2023b.
[105] MHLW, 2023b. *Results of a Survey on Seismic Retrofitting of Hospitals* (in Japanese).
[106] MEXT, 2016. *Current Status and Challenges of Earthquake Preparedness of Disaster Base Hospitals* (in Japanese).
[107] NIED website: https://www.bosai.go.jp/e/index.html

For floods, efforts to strengthen health system resilience are accelerating, supported by efforts such as the national ***Medical Facility Flood Prevention Project***, which is a subsidy program led by MHWL since 2020. Flood risk management in medical facilities is an urgent priority as of 2022, because 27.7% of all hospitals were found to be located in flood risk areas.[108] The program provides financial support to medical institutions that are located in areas at risk of flood and tsunami and expected to be flooded but cannot be relocated. The aim is to shift medical and electrical equipment to higher ground (or upper levels), install flood barrier walls, shields or boards, drainage pumps, and so forth.

Box 4. Flood Protection Measures for Resilient Hospitals: an example from a private hospital – Kurashiki Central Hospital

Major disaster events in nearby regions can create an opportunity to learn from, review and invest in resilience measures in critical medical facilities.

As climate change is increasing the frequency and intensity of floods and other hazards, attention now turns to medical facilities built in locations that were, once upon a time, considered to be safe. Areas with nearby rivers, for example, have seen an increase in heavy rains in recent years,[109] drastically increasing flood risks.

In view of the torrential rains and floods during July 2018 and devastating experience of Mabi Memorial Hospital in the same prefecture (See Chapter 3.5), Kurashiki Central Hospital, located in the heart of the Kurashiki City, Okayama Prefecture, started to study the feasibility, costs, and benefits of several flood resilience strategies. The most straightforward and cost-effective approach identified was to protect the entire facility with removable flood walls.

Although the Kurashiki Central Hospital was not damaged by the July 2018 flooding, administrators recognized that it was similarly vulnerable to future heavy rainfall and flood events, especially because much of its critical equipment was located on the ground floor and basement of the hospital. A flood risk assessment conducted by a group of experts assembled by the hospital indicated that if a major flood event were to occur, the facility would be closed for two years while being rehabilitated. Because Kurashiki Central Hospital serves as one of the few Disaster Base Hospitals in the region, the prospect of it being inoperable for two years was not acceptable. The study also showed that recovery costs from a possible flood event would total 20 billion yen (approximately US $137 million). By contrast, the flood risk reduction measures selected by the hospital were estimated to cost 1.5 billion yen (approximately US $10 million) and considered to be an advisable investment in risk mitigation.

Kurashiki Central Hospital acquired and installed a system consisting of interlocking flood barrier panels, to a height of 1.6m, around the perimeter of the complex. In the event of a potential flood, there are qualified staff ready to install the flood gates (a board installed in the areas that otherwise remain open as entrances and emergency exits) to seal off the complex. This system (Figure B.4.1) avoids flood damage to the facilities, the electrical system, and the medical instruments, allowing uninterrupted services inside the hospital. In addition to such physical protection measures, the hospital is a leading voice in the proactive regional dialogue to enhance coordination mechanisms across health facilities and nursing homes as part of the preparation and implementation of Regional Business Continuity Planning. See Box 7 for more details.

Figure B.4.1 Installation of Flood Barrier by Kurashiki Central Hospital Staff, June 2024.

Source: Kurashiki Central Hospital

[108] Out of the 8,171 hospitals nationwide, 2,265 (27.7%) were located in areas predicted to be flooded by the MLIT. Of the 761 Disaster Base Hospitals, 289 (38%) were located in flood-prone areas, and 216 (75%) of these had some type of flood prevention measures in place. For more information, see Sasaki, 2022: *Collaborative Research Report 'Research on Frequent and Severe Heavy Rain Flood Disasters and BCP'* (in Japanese).

[109] Frequency has increased approximately 1.8 to 2.1 times compared to 1980 (see Japan Meteorological Agency, 2023, in Japanese).

In terms of nonstructural measures, business continuity planning (BCP), coupled with regular training and drills, is promoted in health systems throughout Japan. Diverse health care institutions, including Disaster Base Hospitals (since 2017), Disaster Base Psychiatric Hospitals (since 2019), Regional Perinatal Maternal and Child Medical Centers (since 2022), and Nursing Care Facilities (since 2024) are now mandated to develop BCPs and conduct regular trainings and drills accordingly. These measures are now key accreditation criteria—upon which access to government support, including subsidies, is conditional. The health care facility BCPs also include a raft of prearranged agreements with various stakeholders, such as with nearby health care facilities for hospital transfer, with patient transport companies to secure vehicles, with groundwater owners for emergency water supply, with pharmaceutical wholesalers for prioritized distribution of medicines and supplies, with supermarkets and the food industry to secure potable water in case of emergency, and so forth.

Box 5. Critical Role of Business Continuity Plans (BCPs) for Medical Institutions

Ensuring continuity of health care services and medical facilities is critical to mitigate and manage disaster impacts.

Business Continuity Plans (BCPs) are a key tool to help support the continuity and rapid recovery of critical services in the event of sudden unforeseen events such as disasters, the spread of infectious diseases, major accidents, or supply chain disruptions.

In the aftermath of the 2011 Great East Japan Earthquake (GEJE), 380 hospitals and 4,036 clinics were either completely or partially destroyed, in the three affected prefectures.[110] This prompted the development and implementation of BCPs in hospitals. In March 2012, a notice from MHLW proposed the obligatory formulation of BCPs at medical institutions, and the ministry issued the "*Guidance for Hospital Disaster Response Measures Based on the BCP Concept*,"[111] which provides a guide and checklist for the inspection of hospital disaster plans.

However, according to a survey conducted in 2013 by the Cabinet Office,[112] many hospitals still claimed to lack the skills and knowledge needed to develop BCPs. After the Kumamoto Earthquake in 2016, the MHLW added the mandatory formulation of BCP as a requirement to designate Disaster Base Hospitals, in order to promptly restore functions and continue medical activities. This resulted in a 100% BCP formulation rate for Disaster Base Hospitals in a follow-up survey conducted by the government in 2019.[113]

MHLW formulated additional guidelines that stipulate specific items to be included in the BCP and what kind of training should be conducted after its development; MHLW also provides training programs for health care facilities, to help them develop BCPs.[114]

[110] MHLW, 2011. *Damage to Hospitals and Clinics in the Affected Areas (as of July 11, 2011). Recovery from the Great East Japan Earthquake*, (in Japanese).
[111] MHLW, 2013. *Guidance for Hospital Disaster Response Measures Based on the BCP Concept* (in Japanese).
[112] Cabinet Office, 2013. *Survey on Business Continuity Plan in Selected Fields* (in Japanese).
[113] MHLW, 2019a. *Press Release: Results of Survey of Hospital Business Continuity Plan (BCP) Formulation Status* (in Japanese).
[114] MHLW, 2016b. *Business Continuity Plan (BCP) for Disaster Response in Healthcare Facilities* (in Japanese).

Some examples of recommended structural and nonstructural measures taken to strengthen the resilience of hospitals that serve as bases during disasters in Tokyo are illustrated below.

Recommended Measures to Enhance DRM at Hospitals

1. **Measures against power outage:** Promote the provision of in-house generators that can maintain hospital functions until electricity is restored in the event of a large-scale power outage, and the storage of a certain amount of fuel; Establish agreements with fuel supply organizations and the introduction of power generation systems other than stockpiled fuel, such as stockpiling about three days' worth of fuel to maintain hospital functions.
2. **Measures against water outages:** Promote measures to secure enough water to maintain uninterrupted hospital functions for about three days after a water outage occurs; Incorporate into the Tokyo Metropolitan Government's BCP Guidelines relevant information on maintenance of water tanks and wells, inspection, and countermeasures to address turbid water immediately after an earthquake.
3. **Stockpiling of food, drinking water, medicines,** and so forth sufficient for roughly three days, and the conclusion of agreements with local food supply organizations; Regarding the conclusion of agreements, new reference examples, and so forth have been added accordingly to the Tokyo BCP Guidelines.
4. **Measures against wind and flood damage:** Preventing flooding within the hospital, installing private generators, and so forth on upper floors, suitable countermeasures to keep electrical circuits dry, and prevent damage to buildings from strong winds (regular inspections of the periphery of the hospital, and so forth); Continuing to consider countermeasures in line with reference examples of flood inundation countermeasures, and so forth, being included in the Tokyo BCP Guidelines.
5. **Sewage/drainage measures:** Promote seismic reinforcement of drain pipe connections within hospital premises, and promote the planned introduction of temporary toilets, simple toilets, and so forth.
6. **Measures against earthquakes:** Prepare for earthquake shaking according to differences in building structure of hospitals on low and high floors; Include reference examples of earthquake shaking countermeasures in the Tokyo BCP Guidelines and promote the formulation of BCPs tailored to the actual situation of hospitals.
7. **Measures against snow damage:** Stockpile snow-melting agents and prepare for potential delays in the patient transportation and the stagnation of distribution of essentials, including school meals, etc.
8. **Measures against lightning strikes:** To prevent damage from lightning-induced surges, use medical equipment with built-in surge protection.
9. **Strengthening the system for admitting the sick and injured:** It is important to regularly carry out drills for the admission to hospital of sick and injured patients, and to verify and review operational procedures for managing sudden patient influxes, and so forth.
10. **BCP development:** Develop a business plan that incorporates comprehensive measures to maintain functions according to each hospital's role so that medical care can be reliably provided in the event of a disaster; Review the contents of the Tokyo BCP Guidelines, disseminate them widely to hospitals in Tokyo, and support the formulation of an effective BCP.

Source: Tokyo Metropolitan Government Bureau of Health, n.d. Summary of the Study Group on Strengthening the Functions of Disaster Base Hospitals and Disaster Base Collaborating Hospitals. Bureau of Public Health (in Japanese).

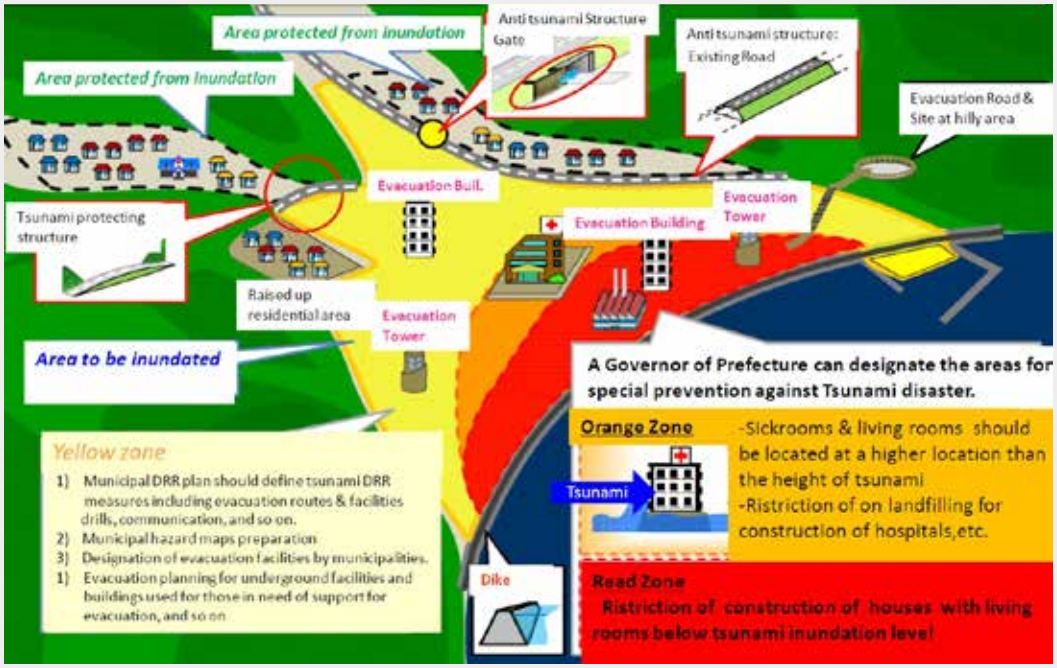
Box 6. Post-Tsunami Resilience Strategy for Medical Facilities

Disaster-resilient development plans can prevent the location of health facilities in hazardous zones, or, conversely, enhance risk reduction and preparedness for those that are unavoidably located in high-risk areas.

After the extensive damage to buildings, including medical facilities, caused by the Great East Japan Earthquake (GEJE) and Tsunami on March 11, 2011, ***the Act on Development of Areas Resilient to Tsunami Disasters***[115] was established to restrict development in areas at risk of tsunami inundation,[116] through the development of municipal Tsunami Resilient Community Promotion Plans. Under the Act, the national government, prefectures, and municipalities are each tasked with shared but differentiated roles as part of detailed tsunami risk management planning *(see* Figure B.6.1*)*.

- ***National Government*** (MLIT): establishes the basic guideline for comprehensively promoting Tsunami Resilient Community Development. Based on the guideline, it provides the advice and research required for setting a Tsunami Inundation Assumption, collecting observation data on wide areas, such as through airborne LiDAR surveys.
- ***Prefectures:*** develop tsunami hazard maps within their respective areas, collecting local data, conducting surveys, and collaborating with municipalities to create accurate and comprehensive hazard maps tailored to their regions.
- ***Municipalities***: establish the **Tsunami Resilient Community Promotion Plan**, where hospitals are included as one of the key infrastructures. The development of the Plan can also serve as a basis for access to financial support from the prefecture or national government to construct tsunami protection facilities, and so forth.

Figure B.6.1 Tsunami risk management planning integrating various measures



Source: Adapted from Cabinet Office, 2017. An Overview of Tsunami DRR Policy in Japan after the Great East Japan Earthquake.

[115] *The Act on Development of Areas Resilient to Tsunami Disasters*: https://www.mlit.go.jp/sogoseisaku/point/tsunamibousai.html (in Japanese)
[116] Cabinet Office, 2021a. *Disaster Management in Japan.*

Key policies and regulations

Japan has comprehensive policies and regulations to ensure disaster resilience of lifeline infrastructure, including health care facilities. For seismic resilience, seismic standards for all buildings, including health care facilities and lifeline infrastructure, are set under the ***Building Standard Law.*** In addition, key DRM structures in Japan, including health care facilities and lifeline infrastructure, follow ***The Functional Continuity Guidelines for Buildings Serving as Disaster Prevention Bases*** established in 2016 by MLIT Housing Bureau. The guidelines not only aim to ensure safety and prevent loss of life in the event of a major earthquake but also emphasize the importance of maintaining continuity of health care services. The focus is based on the experience of long-term hospital service interruptions following the Kumamoto Earthquake.[117] The guidelines outline the minimum standards for critical buildings such as Disaster Based Hospitals, which exceed the requirements of the ***Building Standards Act*** for structural integrity during earthquakes. Key aspects of the guidelines include:

- Consolidation of considerations related to site selection, building design, structural components, nonstructural materials, and building systems.
- In the design of individual buildings, the owner is encouraged to achieve continuity of functions by establishing performance objectives through discussions with designers. These objectives include target levels for structural integrity, condition of nonstructural components, and the desired duration of operational continuity during service interruptions.
- Buildings that typically do not serve as disaster prevention bases, such as residential complexes and offices, can also use these guidelines to consider measures for ongoing habitation and usage after a major earthquake.
- The guidelines are expected to be revised as specific insights and knowledge develop and expand over time.

These standards are now integrated as requirements for the accreditation of Disaster Base Hospitals.[118]

Additionally, the development and management of BCP is now required for all Disaster Based Hospitals and strongly recommended for all other health care facilities including those for care of the elderly.[119] Through the BCPs, hospitals and health care facilities are to secure sufficient backup power, fuel, and water to cope with a disaster for at least three days. The MHLW makes available BCP guidelines and a template for Disaster Based Hospitals and other medical facilities to support adoption.[120] These materials include recommendations on methods and equipment for backup lifeline infrastructure access, such as ways to utilize groundwater for drinking water, installing generators and uninterruptable power supplies, and so forth. For gas outages, alternative heating devices and cooking equipment are also recommended.[121]

[117] During the Kumamoto Earthquake, due to the damage to facilities, 12 hospitals had to limit their service for over a couple of months. For more information on the Guidelines, see MLIT, 2019 (in Japanese). For more information on the impact of the Kumamoto Earthquake on hospitals see MHLW, 2016c (in Japanese).

[118] MLIT, 2019. *Guidelines for the Continuity of Functions for Buildings Serving as Disaster Prevention Bases (New Construction Version) May 2018 (Partially Revised in June 2019)* (in Japanese).

[119] MHLW. 2019b. *Regarding the Development Status of the Hospital's Business Continuity Plan (BCP)* (in Japanese).

[120] For BCP guidelines for medical facilities, see: MHLW, 2016b (in Japanese); for BCP guidelines for nursing care facilities, see: MHLW, 2021e (in Japanese).

[121] MHLW, 2016b. *Business Continuity Plan for Disaster Response at Medical Facilities* (in Japanese).

Additionally, BCP development in health care facilities is incentivized by making it a key eligibility criterion for subsidy programs available for hospitals, nursing care facilities, and so forth.[122]

Box 7. Regional BCPs to Ensure Community-wide Continuity of Health Services

Given the importance of stakeholder coordination and cooperation for effective medical response during emergency, in addition to BCPs in each institution, regional BCPs are being formulated.

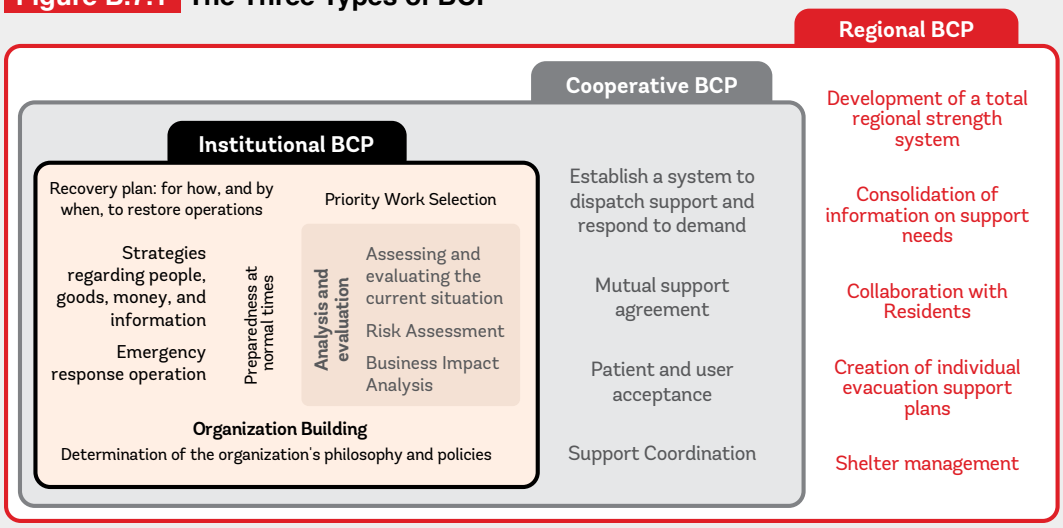
In 2022, MHLW initiated a pilot project to formulate regional BCPs in 26 cities.[123] The pilot encourages diverse actors, including municipal governments, nursing care facilities, and local hospitals, to work together as a coalition to formulate a common BCP, with the support of external experts in disaster medicine and stakeholders from other regions.

The regional BCP requires consistency and synergies with two other layers of BCPs, namely institutional and cooperative BCPs. Through the pilot project, three types of regional BCP formulation guidelines were developed[124] for: 1) inpatient medical institutions providing home medical care; 2) clinics providing home medical care; and 3) home-visit care providers.

The three types of BCPs that are essential for this integrated approach are explained below (see Figure B.7.1):

- **Institutional BCP**, focusing on the continuity of operations within a single facility.
- **Cooperative BCP,** involving mutual support agreements among similar businesses for patient care and admissions during disasters; these are crucial for maintaining essential services such as renal dialysis, cancer treatment, or obstetrics.
- **Regional BCP**, aimed at ensuring continuity of care and early recovery of medical and care services across the community, thus protecting the lives, health, and living conditions of the entire population.

Figure B.7.1 The Three Types of BCP



Source: Adapted from Yamagishi, 2022. Research on BCP development for home-care providers (in Japanese).

[122] Nursing care facilities are also required, from April 2024, to develop a BCP, and compliance is promoted by making BCP development one of the key criteria for government subsidy eligibility. For more information see MHLW, 2020a (in Japanese).

[123] Community Health Research Organization, n.d. *Model Project for Formulation of Collaborative BCP and Regional BCP* (in Japanese).

[124] MHLW Grant System, 2021. *Research on Business Continuity Planning (BCP) for Home Health Care Database of Health and Labor Science Research Results* (in Japanese).

Evacuation centers, established and managed by local governments, **follow the *Guideline on Evacuation Center Operation* developed by the Cabinet Office.**[125] The guideline indicates the need for operators to provide a plan for water, food, and daily necessities to ensure care and good hygiene for the evacuees, and maintain communication with disaster response headquarters. The operations checklist includes continued monitoring of the status of access to lifeline infrastructure after the disaster event, as well as during the evacuation center operations.

Electricity transmission and distribution operators must develop disaster management and business continuity plans in accordance with DCBA, Article 39. These plans typically prioritize medical facilities for power restoration. For example, the Disaster Management Plan of Kansai Power Company states that, in principle—when restoring power transmission equipment, substation equipment, and distribution equipment—hospitals, transportation, communications, media, water, gas, public institutions, evacuation shelters, and other important facilities will be prioritized, based on an assessment of need and effectiveness.[126] Furthermore, power companies are to jointly create a plan for cooperation with other companies to effectively respond to shocks that could disrupt the stable supply of electricity, and submit these plans to the Minister of Economy, Trade and Industry (METI).[127]

Evacuation shelter in Hitoyoshi City, Kumamoto: Managing Covid-19 during 2020 floods. Photo: Digital Archives of Kumamoto Disasters, Hitosyoshi City ▶

[125] Cabinet Office, 2016b. *Evacuation Center Management Guidelines* (in Japanese).
[126] Kansai Electric Power Co., Inc. (KEPCO), 2023. *Disaster Management Plan 2023* (in Japanese).
[127] The *Electricity Business Act* Article 33-2 serves as the basis for businesses to establish joint cooperation plans, operationalized in the event of a disaster. For more information see METI, 2024 (in Japanese).

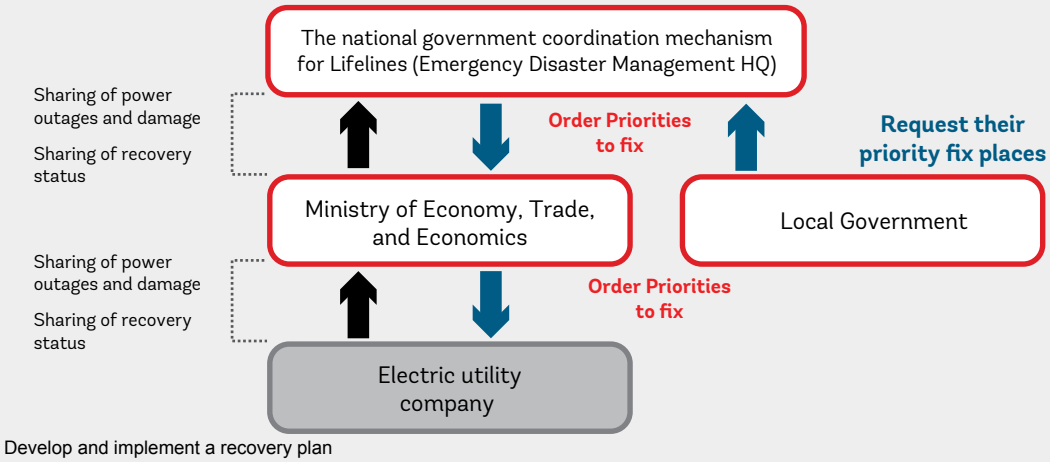
Box 8. Priority Electricity Recovery and Emergency Power Supplies for Hospitals

Priority restoration mechanisms for powering health facilities during emergencies based on local priorities have proved very effective for maintaining the business continuity of medical institutions.

Power outages in a hospital can be catastrophic, endangering patients and halting essential medical services that rely on electrical power for critical life-saving equipment.[128]

Learning from GEJE, which damaged power plants and electric facilities, resulting in power outages over a wide area,[129] Japan established a **power restoration mechanism** for exceptionally large-scale disasters over an extensive area, whereby the National Emergency Disaster Management HQ can take control of the lifeline infrastructure restoration (Figure B.8.1).[130] Through this mechanism, the head of that HQ fields requests from the affected areas, and METI prioritizes the restoration of power, considering the geographical distribution of affected hospitals and where patients are being treated in affected areas.

Figure B.8.1 Priority Recovery of Energy Supplies for Critical Health Facilities



Source: Adapted from METI, 2014.

The government provides budgetary support for the installation of emergency power supplies in critical facilities, in particular Disaster Base Hospitals, which are required to have enough fuel to generate their own electricity for an initial three days. In addition, prefectures compile a list of hospitals and other important facilities that should be given priority in dispatching power supply vehicles in the event of a disaster, and share this list with electric power companies.[131] At the time of the Kumamoto earthquake (2016), the government successfully dispatched 110 power supply vehicles quickly from electric power companies nationwide to help ensure the necessary electricity supply to hospitals and other important facilities.[132]

[128] Strzyżyńska, 2023. *Solar Energy Could Power All Health Facilities in Poorer Countries and Save Lives, Experts Say,* The Guardian, 17 Nov. 2023.
[129] METI 2011. *Overview of the Widespread Power Outages That Occurred at Tohoku Electric Power Company as a Result of the March 11 Earthquake* (in Japanese).
[130] METI 2014, *Priority of Power Restoration in the Event of a Disaster* (in Japanese), and METI 2021a, *About Disaster Response* (in Japanese).
[131] METI, 2021. *Progress In Listing Critical Facilities and Concluding Disaster Coordination Agreements Between Municipalities and Electric Power Companies* (in Japanese).
[132] Cabinet Office, Disaster Management, n.d.1. *Efforts to Support Lifeline Restoration* (in Japanese).

Similarly, water suppliers' responsibilities during disasters are outlined in the Water Supply Act. Article 40 of that Act states that in the event of a disaster or other emergency, if it is deemed necessary and appropriate, the prefectural governor may order water supply operators or service providers to supply water to other operators or service providers, specifying the period, volume, and method of supply, as regulated.[133] The water supply companies also develop their post-disaster response plans and often indicate Disaster Base Hospitals as a key priority for restoration. For example, the Tokyo Metropolitan Government Bureau of Waterworks, the water supplier for Tokyo, indicates in its Earthquake and Emergency Response Plan that it prioritizes the restoration of water supply to Disaster Base Hospitals and other key facilities within the initial three days, and that hospitals will be the top priority for dispatch of emergency water supply stations (trucks).[134] Furthermore, in the event of a disaster, the Bureau dispatches its Water Emergency Team to quickly secure water supply routes to important facilities, especially the Tokyo Disaster Base Hospitals that are central to medical relief activities.[135]

For ICT, the Ministry of Internal Affairs and Communications (MIC) developed the Disaster-Resilient Information and Communication Network Implementation Guidelines in 2014. It is recommended that municipalities introduce ICT systems that are available during disasters, such as a Community Wireless System and satellite communication.[136] MIC has also developed ***Guidelines for Emergency Communication Methods to be Secured during Disaster Medical and Relief Activities***. These guidelines target the key institutions for post-disaster medical relief, including Disaster Base Hospitals, first aid centers, major hospitals, JMA, Red Cross, DMAT, JMAT, public health centers, and so forth, and make recommendations on the minimum functional and technical requirements to maintain key communications among health care providers in the event of a disaster. For example, satellite-based phone and data communications are recommended to secure access to phone lines, internet, and EMIS.[137]

Box 9. Resilient Communication Systems for Medical Institutions

Installation of multilayered alternative communication mechanisms in health facilities is fundamental to ensure resilient communication during disasters.

Uninterrupted online connectivity during emergency situations enables timely and effective communication and coordination among a wide network of stakeholders. At hospitals and medical facilities, the use of ICT is crucial for managing patient flow, maintaining communications despite potentially damaged infrastructure, and facilitating decision-making by emergency responders through data, text, and images.

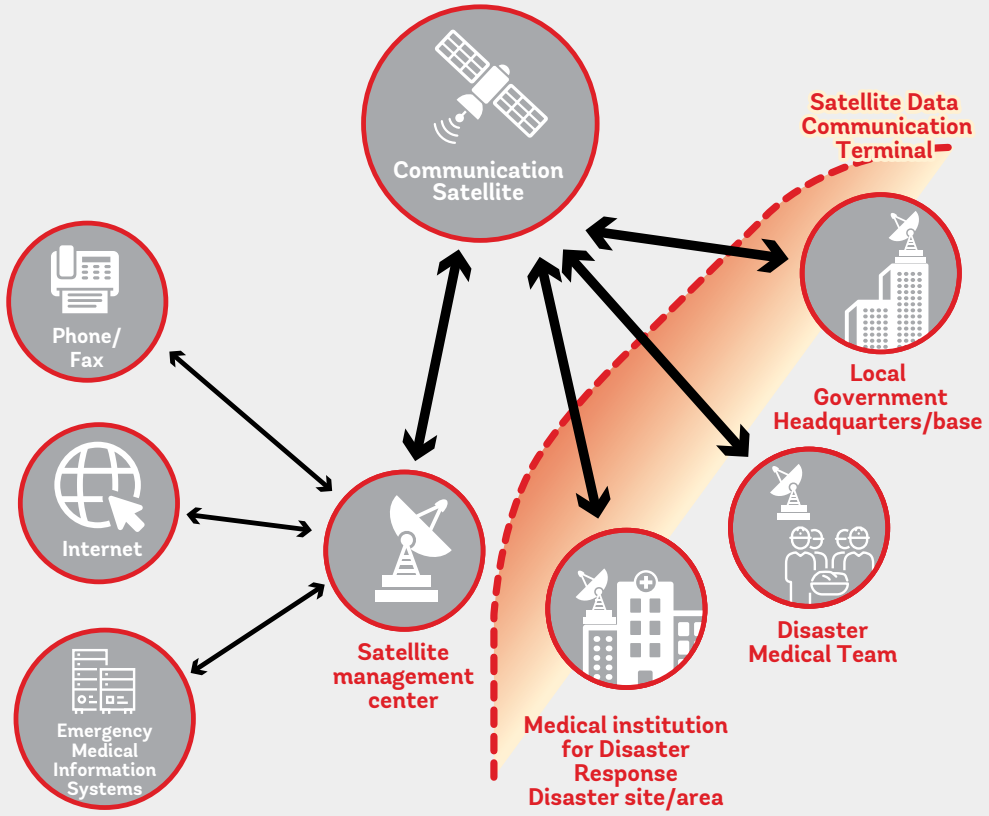
[133] Government of Japan. *Water Supply Act* (1957): https://elaws.e-gov.go.jp/document?lawid=332AC0000000177.
[134] Tokyo Metropolitan Bureau of Waterworks, 2020. *Earthquake Emergency Countermeasures Plan – Updated* (in Japanese).
[135] Tokyo Metropolitan Bureau of Waterworks, 2022. *Disaster Prevention Measures* (in Japanese).
[136] MIC, 2014. *Disaster-Resilient Information and Communication Network Implementation Guidelines* (in Japanese).
[137] MIC, 2016. *Communications Guidelines for Emergency Communication Methods to be Secured in Disaster Medical and Relief Activities* (in Japanese).

Box 9 (cont.)

As part of a subsidized project, the MHLW is supporting Disaster Base Hospitals to provide satellite telephones (Figure B.9.1).[138] At the same time, the private sector is conducting feasibility studies to provide faster satellite links,[139] a service that can provide a stable connection even in areas where Internet communication has been disrupted, such as in disaster-stricken areas.[140] In this regard, it is crucial to ensure that key stakeholders are familiar with the use of this technology to be ready to communicate in the event of a disaster.[141]

Japan has also institutionalized a system called "Disaster Priority Communications", under the *Telecommunications Business Act,*[142] to ensure that phones that have been designated for priority communication in times of disaster are not subject to the usual restrictions, such as those on phone numbers owned by hospitals.

Figure B.9.1 Japan's Multilayer Communication System Networks For Health Facilities.



Source: Adapted from MIC, 2016.

[138] Cabinet Office, 2021b. *Disaster Prevention White Paper 2021 | Part 3 Chapter 2 1 1-2 Development of Disaster Prevention Facilities* (in Japanese).
[139] See, for example: *au – Starlink. Connecting the Unconnected*: http://www.au.com/english/lp/starlink/
[140] Crisis Management Business EXPO, n.d. *Starlink Service with High Potential for BCP and Disaster Countermeasures* (in Japanese).
[141] Japanese Red Cross Wakayama Medical Center, 2020. *Means of Communication in Times of Disaster – Wireless Communication* (in Japanese).
[142] Telecommunications Business Act, Article 8: https://www.japaneselawtranslation.go.jp/ja/laws/view/4450.

Additionally, in line with the ***Basic Act for National Resilience Contributing to Preventing and Mitigating Disasters for Developing Resilience in the Lives of the Citizenry*** enacted in 2013, the Cabinet Secretariat develops a ***National Resilience Basic Plan*** every year. In the 2022 Plan, several initiatives to strengthen the resilience of buildings and access to lifeline infrastructure services in emergency situations at Disaster Base Hospitals and other major national hospitals were included as priority actions. Budgets were allocated to support putting in place backup systems for power, water, fuel, and ICT as well as to promote and support the development of BCPs in medical facilities.[143]

3.6 Opportunities

Japan's health system is at a crossroads, due to the aging population and increasing social security costs, and a wide range of stakeholders are being engaged to enhance its sustainability. Japan has a long history of offering universal health coverage to all citizens, but the financing models for the national health insurance scheme are being reassessed to ensure sustainability and equitable access to services as further demographic shifts are expected to continue. Within the health sector, significant proportions of both human and financial resources are currently allocated to chronic diseases and age-related health conditions that often require longer-term care services, and this trend is likely to continue. Securing health workers is another critical concern, because demand for elderly care is expected to rise, while the working population falls. By 2040, a shortage of one million workers in the medical sector is expected.[144] This has compelled Japanese health services to extend its network beyond hospitals and clinics, and to reach homes and elderly day-care facilities through diverse institutions and professionals within communities.

To strengthen resilience, Japan's health system must consider the potential impacts of disasters, as well as opportunities to better coordinate and utilize the wide and diverse network of health care services. Japan has a robust network of health care facilities and professionals that provide medical treatment and assistance when faced with a disaster or pandemic. Simultaneously, many of these institutions require special assistance to cope with disasters, in order to ensure that people with diverse and special needs are cared for, especially to ensure that those who are ill, or require livelihood support at home or in nursing homes, can continue to access support. Additionally, the unprecedented COVID-19 response efforts have spurred Japanese health systems to introduce a substantial suite of institutional and regulatory reforms, while highlighting the need for a more fit-for-purpose coordination mechanism depending on the type and scale of disaster. For example, based on the need for a more centralized coordination mechanism for a large-scale pandemic such as COVID-19, Japan established the Cabinet Agency for Infectious Disease Crisis Management (CAICM) as a leadership organization to oversee and coordinate a high-level response with the relevant ministries and agencies in the event of an infectious disease crisis. For more details see Box 13.

[143] Cabinet Secretariat, 2022. *National Resilience Annual Plan 2022* (in Japanese).
[144] MHLW, 2022d. *2022 Edition of Annual Health, Labour and Welfare Report, Part 1 (Outline).*

Regarding high-quality infrastructure, there are several opportunities to further strengthen the resilience of lifeline infrastructure that support health systems. Some key actions have been identified through the process of preparing for the update of prefectural Medical Plans in 2024.[145] These include:

- ***Implementing resilience measures beyond Disaster Base Hospitals.*** To enable effective disaster medicine, there must be strong coordination between various stakeholders, including hospitals, clinics, mental health care providers, public health workers, nursing homes and elderly care facilities, first-aid centers, health care support services in the evacuation center. Although enforcement of seismic standards and the establishment of business continuity planning in disaster-base hospitals have advanced significantly in Japan, furthering these efforts in other health care facilities is key to mitigating any disruption of health care caused by damage to infrastructure.
- ***Planning for health care service continuity.*** Health care facilities need to explore innovative ways to maintain or quickly resume the provision of medical care in the aftermath of disasters. Therefore, it is crucial for these facilities to plan ahead, and have backup systems in place, if they are to cope with the loss of critical lifeline infrastructure services such as transport, water, power, energy, or ICT, as well as some of the facility buildings. For example, the use of mobile medical containers has been explored as a way of quickly setting up temporary clinics and supplementing damaged hospital facilities.
- ***Accelerating measures against flood risks.*** Many health care facilities in Japan are located in high flood-risk areas, from whence relocation may not be an option in the near future. At these facilities, the key today is therefore to put in place structural measures, such as flood barrier shields, relocate medical and power equipment to higher ground or upper levels, and install drainage pump and rainwater storage tanks; as well as nonstructural measures, such as the development of BCPs, implementation of training and drills, and prearranged agreements to enable quick access to the support and resources needed in the event of flooding.

[145] MHLW, 2019c. *Regarding Securing Fuel and Water for Disaster Base Hospitals, etc.* (in Japanese).

4

Japan's Disaster Medicine and Infectious Disease Control

Although robust and resilient health systems are needed for managing and responding to disasters and pandemics alike, the historical evolution in Japan of disaster medicine and infectious disease control have been quite distinct processes. Japan's disaster medicine has evolved consistently, through its frequent experiences with large-scale disasters caused by hazards such as earthquakes over the years, especially since the 1995 Great Hanshin Awaji Earthquake. By contrast, over the span of Japan's modern history, until 2020—and the COVID-19 pandemic—infectious disease control had been more domestically contained, focusing more on prevention and preparedness than emergency response. As a result, their regulatory and institutional environments have developed separately. The unprecedented, widespread, and long-term impacts of COVID-19 created an opportunity for the two fields to explore synergies and intersections. For example, DMAT, which is normally deployed for disaster response, was mobilized in the early stages of the COVID-19 pandemic, when there was a need to return Japanese nationals from overseas and treat patients without spreading the infection that occurred on the cruise ship.[146] The historical evolution, key regulations and governance, and stakeholders of disaster medicine and infectious disease control in Japan are presented in this section.

4.1 Disaster Medicine in Japan

Disaster medicine in Japan was first formalized in the 1990s, and has continuously evolved since then, aiming to reduce disaster-related casualties from preventable disaster deaths (PDDs). The experiences and lessons learned from large-scale disasters since the GHAE have catalyzed the establishment and advancement of disaster medicine in Japan. Before GHAE, Japanese disaster medicine mainly took place abroad, with teams of Japanese doctors joining international humanitarian aid efforts abroad. This was because Japan had not been affected by large-scale disasters after 1959 Isewan Typhoon (Typhoon Vera) until the 1990s.

[146] DMAT, 2020. *Report on DMAT Activities in the Fiscal Years 2019 to 2020* (in Japanese).

The 1995 GHAE compelled the establishment of national-level policies and institutions for disaster medicine in Japan. These enhanced the capacities and responsiveness of medical care in the immediate aftermath of a disaster (hyperacute phase). GHAE highlighted the need to provide better care and reduce the number of casualties, especially from physically wounded patients suffering from crush syndrome, one of the key causes of lives lost. This led to the designation in 1996 of ***Disaster Base Hospitals*** that are equipped with advanced medical facilities, and are tasked to provide life-saving medical care for critically ill patients during disasters, accepting patients from disaster-stricken areas, with the ability to support medical transportation needs over a wide area. The ***Disaster Medical Assistance Team (DMAT)***[147] was also formed in 2005, as a special national level squad specialized in handling medical care during the acute phases of disasters (48–72 hours after the disaster). The DMAT mechanism was also supported by the development of medical transportation plans and disaster emergency medical information systems to serve a wide area. ***Japan Medical Association (JMA)***, a voluntary physician's association, also formed and deployed the ***Japan Medical Association Team (JMAT)*** that can in a coordinated manner take over medical provision from DMAT and help affected areas to provide—and recover—their medical services over the longer term. Furthermore, the ***Japanese Society of Disaster Medicine*** was founded in 1995.

Box 10. Establishment and Improvement of Disaster Medical Assistance Team (DMAT)

Investing in specialized, mobile medical teams for rapid disaster response can provide timely, life-saving medical care to victims in the immediate aftermath of a disaster.

The **Disaster Medical Assistance Team (Japan DMAT)**[148] is a professionally trained medical team established in 2005 under the umbrella of the MHLW. It consists of doctors, nurses, and logisticians with the mobility to operate at the scene of a large-scale disaster or accident involving multiple injuries and illnesses within 48 hours. DMAT has been dispatched to large-scale earthquakes, typhoons, and floods (see Figure B.10.1), and each time the organization has been strengthened and trained for further improvements. It is financed by both national and local governments. Normally, the national government covers nationwide needs such as training,[149] while the prefectural governments support medical supplies and local drills[150] considering the local risk of disasters.

Figure B.10.1 Example of Tokyo Fire Department DMAT Operation

Source: Tokyo Fire Department, 2011.

[147] DMAT, n.d. *About DMAT* (in Japanese).
[148] DMAT, n.d. (in Japanese).
[149] MHLW, 2023. *Summary of FY2023 Budget Proposal.* Medical Policy Bureau (in Japanese).
[150] Tokyo Metropolitan Government, 2022. *2023 Budget Request Summary.* Bureau of Social Welfare and Public Health (in Japanese).

Box 10 (cont.)

For DMAT to function in a health emergency, it is important that its members have knowledge and training for various types of disasters. The training curriculum is nationally standardized to facilitate rapid, effect teamwork.[151] To become a registered DMAT member, participants must be certified, successfully passing both a written and practical exam on the final day of training. DMAT member certification is renewable every five years. To renew, DMAT skills maintenance training (onsite and online) must be taken at least twice within a five-year period.[152] Following the COVID-19 pandemic, it was clarified that the training materials must also cover infectious diseases.[153]

The experience of 2011 GEJE further advanced emergency medicine in Japan by putting in place mechanisms to manage more complex and multihazard, longer-term disaster events. Given the large number of disaster victims, the wide geography of the disaster-affected areas, as well as the need to manage patients impacted by diverse hazards including the earthquake, tsunami, and nuclear accident, it became clear in the aftermath of GEJE that a broader and longer-term medical response plan was needed. The importance of post-disaster medicine was highlighted, not only to provide life-saving medical treatment to those directly injured by the disaster event, but also to provide sufficient care to avoid loss of life during the evacuation and response phases. This led to the development of a longer-term emergency medicine system in Japan. It involved strengthening medical logistics and emergency medicine headquarters functions, enhancing medical transportation networks, and providing medical response capacities within the evacuation shelters. This expanded Japanese emergency medicine, enabling it not only to cover the immediate aftermath of a disaster (hyperacute phase), but also the medium- to longer-term medical care needs that persist in the response and recovery phases (sub-acute and chronic phases).

The 2016 Kumamoto Earthquake[154] sheds light on the importance of the mental health impact on survivors and the need to focus more on disaster-related deaths, leading to more integrated care systems. During the GEJE response, the lack of predefined methods and guidelines led to the uneven distribution of psychiatric and social care for the disaster victims. Learning from this lesson, in 2013, ***Disaster Psychiatric Assistance Team (DPAT***) was established by MHLW, whereby a team of psychiatric doctor, nurse and coordinator is dispatched to the disaster affected prefecture within 48 hours to provide support in setting up headquarters functions, conducting needs assessments, and responding to acute-phase psychiatric medical needs. DPAT was first dispatched after the Kumamoto Earthquake, demonstrating a holistic approach to disaster health care. Furthermore, Kumamoto Earthquake resulted in four times more disaster-related deaths—such as people who died from disaster-related injuries, or fell ill at evacuation centers—than deaths caused directly by the earth tremors[155] Of these disaster-related deaths, fully 80% were among those over the age of 70. This again highlighted the importance of post-disaster medical care in the medium-term recovery phases, and the specialized support needed for vulnerable groups, especially the elderly.

[151] DMAT, 2023. *FY2023 DMAT Skill Maintenance and Supervisory DMAT Registrant Skill Maintenance and Logistics Training Implementation Guidelines* (in Japanese).
[152] Information for Renewal of Member Registration available (in Japanese) at: http://www.dmat.jp/koshin/koshin.html.
[153] MHLW, 2022e. *Revision of Japan DMAT Activity Guidelines* (in Japanese).
[154] Cabinet Office, 2016a. *Kumamoto Earthquake* (in Japanese).
[155] The death toll from Kumamoto Earthquake included 218 disaster-related deaths and 50 direct deaths. For more information, see the *Digital Archive of Kumamoto Disaster*: https://www.kumamoto-archive.jp/en.

◀ A firefighter standing in front of a Tokyo Fire Department vehicle at a park in central Tokyo. Photo: electravk / istock.com

Similarly, since the 2018 flood response experience, efforts to promote the establishment of public health and social welfare coordination teams are emerging. For example, the ***Disaster Health Emergency Assistance Team (DHEAT)***, initiated in 2018, is composed of public health doctors, public health nurses, administrative staff, and others. During a major flood event in western Japan in July 2018, they were dispatched for the first time to Kurashiki City and other areas, serving as a bridge between medical and public health activities. Similarly, a ***Disaster Welfare Assistance Team (DWAT)***, is being formed, composed of social welfare professionals such as certified care workers and certified social workers. At the aforementioned 2018 flood, DWAT also supported disaster-affected areas, including Kurashiki City, by conducting interviews with evacuees and sharing information with medical and health teams regarding social welfare needs.

Most recently, the COVID-19 response efforts catalyzed another significant transformation for disaster medicine in Japan. At the beginning of the pandemic, Japan was able to quickly respond and set up health management and treatment facilities for early COVID-19 patients through mobilizing the DMAT teams. By April 2022, infectious disease response was officially added as a mandate for DMAT. Compared to earthquakes and floods, COVID-19 led to much longer and recurring periods of emergency, which required engagement of wider stakeholders and skill sets for medical response. In particular, it became crucial to ensure coordination with the public health centers situated at the frontline, in the sense of connecting patients with health care in the communities.[156] Lessons learned from COVID-19 are now being integrated within diverse policies, such as government DRM and medical care plans, health facility business continuity plans, as well as within The National Action Plan for Novel Influenza, etc., and so forth, to strengthen infectious disease preparedness and response. (See section 4.5 for more information).

[156] For more information, see Mase, 2023. *Interview: From Natural Disasters to Infectious Diseases, Disaster Medicine Enters a New Era.* M-Review (in Japanese).

Box 11. Japan's DMAT Supports Moldova's Disaster Medical System

The development of a DMAT system is a significant step forward for Moldova's disaster preparedness.

In August 2023, the Japan International Cooperation Agency (JICA) organized a DMAT training in Chisinau, Moldova,[157] designed to help the country in developing its own DMAT system to respond to disasters. The training was attended by 20 participants from the National Centre for Pre-Hospital Emergency Care, National Agency for Public Health, General Inspectorate for Emergency Situations, Institute of Emergency Medicine, and National Single Service for 112 Emergency Calls, in the Republic of Moldova. Japanese DMAT experts provided lectures and workshops on the Japanese DMAT system (Figure B.11.1), including its organization, training, and operational procedures.

The participants discussed how to adapt the Japanese DMAT system to Moldova's needs. At the end of the training, the participants reached a tentative agreement about the structure and system of Moldovan DMAT and agreed on the necessity of the DMAT in Moldova.[158]

The participants expressed their appreciation for the Japanese DMAT experts' knowledge and expertise and recognized the training as an important opportunity to learn about disaster response and to collaborate with other professionals from different sectors.

Figure B.11.1 Knowledge Exchange between Moldova and Japan through JICA

Source: JICA, 2023.

4.2 Infectious Disease Control in Japan

Japan's efforts on infectious disease control began in the late 1990s, albeit preceded by a century of efforts on communicable disease management based on the *Communicable Disease Prevention Law* enacted in 1897.[159] Owing to medical advances such as the wider availability of vaccination, and to align with the growing international movement for infectious

[157] JICA, 2023. *DMAT Training Program for Building Disaster Medical System in Moldova* (in Japanese).
[158] Some of the discussions highlighted the need for a mix of medical professionals, including doctors, nurses/feldshers, and paramedics, who should be trained in a variety of disaster response skills, including triage, first aid, and mass casualty management.
[159] MHLW, 1999. *White Paper – Section 2. Measures against New Infectious Diseases.*

disease surveillance, based on recommendations made by the Public Health Council in 1997, the *Communicable Disease Prevention Act* was replaced by the ***Act on the Prevention of Infectious Diseases and Medical Care for Patients with Infectious Diseases (Infectious Disease Control Act)*** in 1998. The new Act requires the national government, local governments, and other related organizations to work together on a regular basis to take measures to prevent the outbreak and spread of infectious diseases. It also requires the national government to improve its surveillance of infectious disease, and to support public institutions and medical personnel with the information necessary to prevent infectious diseases. Furthermore, the Act emphasizes the importance of actions taken by individual citizens for infectious disease control, the need to protect the human rights of patients, as well as setting classifications of infectious diseases according to their transmissibility and the severity of symptoms. The Act also stipulates the government's responsibilities for surveillance, as well as describes the methodology of setting the disease categories in which national and prefectural governments utilize as a guideline to determine their response. COVID-19 was first considered a Category II infectious disease and was added to Category IV in May 2023.[160] Table 4.1 shows the categories of the diseases and the measures that can be taken.[161]

Table 4.1 Infectious Disease Control Act: Disease Categories and Measures.

	Report from doctors to the community health center, investigation on the cause of the infectious disease	Elimination of mice, insects, etc., that carry pathogens, disinfection of contaminated areas	Restrictions on employment, recommendation and conducting of medical checkups	Recommendation of hospitalization and involuntary hospitalization	Isolation based on the Quarantine Act, building access restrictions, blockade of buildings, traffic restrictions
Category I Infectious Diseases Ebola Hemorrhagic Fever, Plague, Lassa Fever, etc.	"Extremely dangerous"- patients, suspected patients, asymptomatic disease carriers need to be hospitalized				
Category II Infectious Diseases Tuberculosis, SARS, Avian Influenza (H5N1, H7N9), etc.	"Dangerous" - patients, some of suspected patients need to be hospitalized				
Category III Infectious Diseases Cholera, Shigellosis, Typhoid Fever, etc.	"Risk due to employment in specific occupations"				
Category IV Infectious Diseases Rabies, Malaria, Dengue Fever, etc.	"Disinfection of animals and buildings is necessary"				
Category V Infectious Diseases Influenza, Chlamydia, Syphilis, etc.	"Surveillance is required"				

Source: Saito, 2023.

[160] MHLW, 2023c. *Regarding the Response to Novel Coronavirus Infection after the Shift to Category V Infectious Disease* (in Japanese).

[161] Saito, 2023. *About Laws Related to Infectious Disease Control: Infectious Disease Control Law. 1st Infectious Disease Crisis Management Training Session.* National Institute of Infectious Diseases (NIID) (in Japanese).

The *Infectious Disease Control Act* has been updated in response to several infectious disease-related events. Since its passage in 1998, the Act has undergone six revisions, catalyzed by events such as the 2002–2004 SARS outbreak, the 2014–15 avian influenza outbreak, and most recently the Coronavirus (COVID-19) outbreak starting in 2020. Table 4.2 provides further details of the revisions.

Table 4.2 Revision of The Infectious Disease Control Act

Date	Contents revised / added
2003 Revision	• Strengthen emergency response (lessons learned from SARS). • Add category 1 infectious diseases (SARS, smallpox). • Strengthen measures against zoonotic diseases.
2006 Revision	• Introduction of pathogen management system. • Review of disease classification and categories: i.e., South American hemorrhagic fever (class 1), tuberculosis (class 2), anthrax, etc. (class 4) SARS (Category 1 Category 2), intestinal infection (Category 2 Category 3). • Abolition of the old Tuberculosis Prevention Law.
2008 Revision	• Establish new category of "new type influenza and other infectious diseases."
2014 Revision	• Added category 2 infectious diseases (MERS, specific avian influenza) • Strengthen information collection system (specimen collection regulations, etc.).
2021 Revision	• Recognize the new coronavirus infection as a "new type of influenza and other infectious diseases." • Review of hospitalization measures (penalties, lodging/home treatment) • Enhance progressive epidemiological surveys, etc.
2022 Revision	• Develop public health and medical care provision systems during COVID-19 outbreaks, etc. • Update prevention plans and prearranged agreements between prefectures and medical institutions, etc.

Source: Saito, 2023.

4.3 Key Regulations and Governance Mechanisms

Disaster Medicine

The key regulations for disaster medicine in Japan are the *Disaster Countermeasures Basic Act (DCBA) and the Medical Care Act.* Based on the DCBA, the government establishes the Basic Disaster Management Plan, and the prefectures and municipalities establish the ***Regional Disaster Management Plans.*** At the national level, the ***Basic Disaster Management Plan*** based on ***DCBA*** elaborates on rescue, first aid, medical care and firefighting as a key component.[162] At the local government level, the Prefectural ***Medical Care Plans*** must be developed and updated in compliance with the ***Medical Care Act.*** The plan includes a section that describes how the

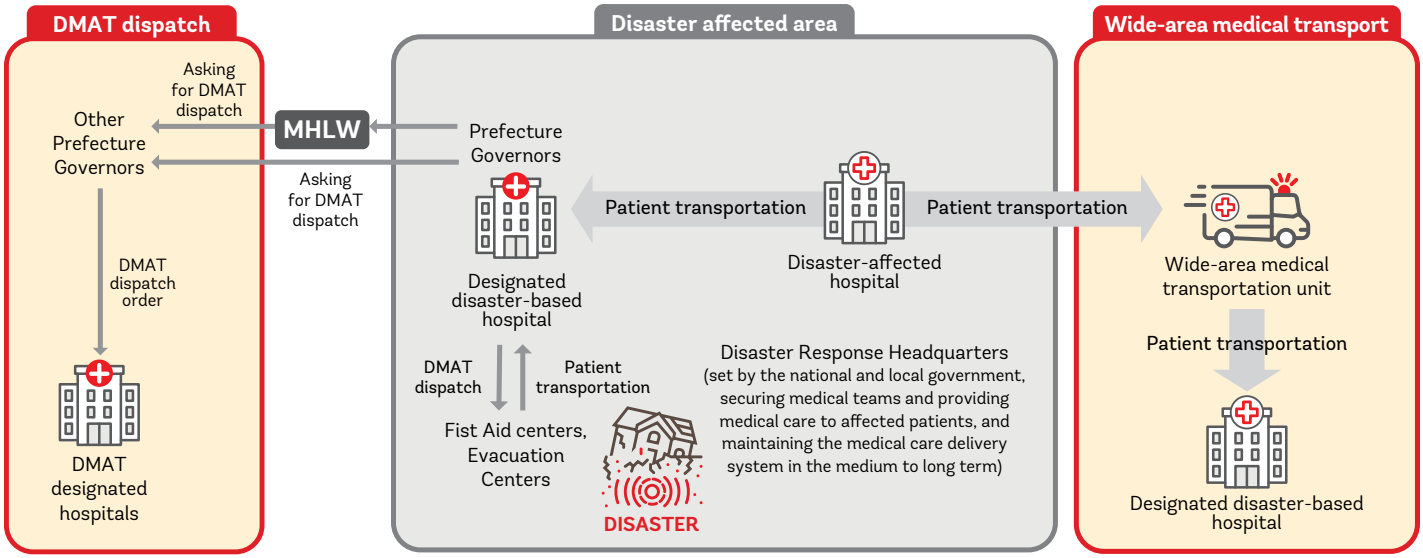
[162] For more information, see Cabinet Office, 2024. *Basic Disaster Management Plan*, Disaster Management Bureau (in Japanese).

prefecture plans to secure medical care in times of a disaster. In summary, based on the Medical Care Act, prefectures establish medical care plans, while the MHLW sets the indicators that serve as the foundation for these plans.

Similarly, at the prefectural and municipal levels ***Regional Disaster Management Plans*** are developed for different types of disaster (normally earthquakes and wind and floods, volcanic eruption, nuclear accident, other large-scale accidents) in line with the ***DCBA***, and these plans also include sections related to medical relief and health care measures in the event of a disaster. Within these plans, a diverse range of activities that comprise disaster medicine in Japan are articulated (see Figure 4.1), including:

- Requesting support from the ***DMAT*** and other medical support networks, and dispatching medical teams to disaster-stricken areas at the time of a disaster to conduct rescue and triage, and provide life-saving medical care;
- Providing medical treatment at disaster-affected health facilities, centered around the ***designated disaster-based hospitals*** located within the disaster-affected local government;
- Providing public health; and psychological support provided at ***first aid stations and evacuation center;***
- Transporting critical patients to disaster-base hospitals outside the disaster-affected area based on a ***wide-area medical transportation*** plan;
- ***Coordinating with related organizations*** such as the national and local disaster response headquarters, fire departments, police departments;
- Establishing and managing a disaster/emergency ***medical information system;***
- Stockpiling of ***medical supplies***; and
- Conducting ***training and drills.***

Figure 4.1 Overview of Disaster Medicine Activities in Japan.



Source: Adapted from MHLW, 2020b. Regarding Disaster Medicine (in Japanese).

Key policies for disaster medicine in Japan are being updated based on the lessons learned from COVID-19. As part of the latest update process of the prefectural level ***Medical Care Plans***, in 2023 MHLW announced the basic policy and medical planning guidelines for the 8th medical plan to start in 2024, which included recommendations on key areas, including updates required for pandemics. For example, for the disaster medicine section, it recommended revision of the DMAT and DPAT scope of work, so that assistance is provided not only in the event of a disaster, but also for infection control management to support municipal governments in coordination with infectious disease control experts, and to include continuous care provision support for facilities where focused outbreaks happen.[163] This includes functions such as coordinating hospital admissions with infectious disease experts for prefectural patient intake, and providing infection control and business continuity support for care facilities where clusters have occurred. Similarly, as part of the 2021 update of the national level ***Basic Disaster Management Plan***, several updates were made for effective disaster response while considering potential impacts of infectious disease, especially COVID-19. The updated plan included: infectious disease measures at evacuation centers (hygiene management of evacuation centers, securing appropriate space, isolation of affected patients, and so forth); updating evacuation center protocols and training programs in consideration of infectious diseases; updating emergency stockpiles by adding items specific for infectious disease prevention and response, such as masks, disinfectants, partitions, and so forth; putting in place information sharing, to allow for evacuation support if needed for those receiving home treatment, and so forth; and developing and updating guidelines for local government support staff during disaster.[164] (See section 4.5 for more information).

Infectious Disease Control

As mentioned above, the *Infectious Disease Control Act* first established in 1998 is the key regulation for infectious disease control in Japan. In accordance with the Act, the MHLW formulates the Basic Guideline for promoting an integrated approach to infectious disease prevention, and prefectural governments plan and implement Infectious Disease Prevention Programs in line with the Basic Guideline.

The *Infectious Disease Control Act* also stipulates the roles and responsibilities of the national and local governments for infectious disease control. Both national and local governments are responsible for: 1) Knowledge dissemination through education and awareness raising; 2) Gathering, analyzing, and providing information on infectious disease risks and countermeasures; and 3) Conducting training and developing the human resources for infectious disease research, testing capabilities, and prevention. National governments are also tasked to promote pharmaceutical research and development, improve testing systems, and secure international collaboration, and provide technical and financial support to local governments.[165] The Act also stipulates distinct roles and responsibilities as follows:

[163] MHLW, 2022f. *Summary of Opinions from the Working Group on Emergency / Disaster Medicine* (in Japanese).
[164] Cabinet Office, 2021c. *Disaster Prevention White Paper 2021 | Part 1, Chapter 1, Section 2, 2-1 Amendment to the Basic Disaster Prevention Plan.* Disaster Management Bureau (in Japanese).
[165] Iwasaki, 2020. *What Are the Responsibilities of the National and Local Governments in Infectious Disease Control?* m3.com (in Japanese).

The key roles of **national government** include:

- Designation as a designated infectious disease (Cabinet Order);
- Establishment of ***Basic Guidelines for the Comprehensive Promotion of Infectious Disease Prevention*** (Basic Guidelines) and reconsideration every five years (Ministry of Health, Labor and Welfare);
- Collection of infection information through prefectures (Ministry of Health, Labor and Welfare);
- Publication of collected information in newspapers, broadcasts, and the Internet (Minister of Health, Labor and Welfare);
- Designation as a medical institution for specific infectious diseases (Ministry of Health, Labor and Welfare);
- Operation of quarantine stations (Ministry of Health, Labor and Welfare); and
- Strengthening the functions of—and promoting research and development by—the National Institute of Infectious Diseases and the National Center for Global Health (as stated in the Basic Guidelines).

Local governments are responsible for delivering medical care to infectious disease patients and coordinating with quarantine stations, and so forth. The **prefecture** is the key local government entity that carries out roles stipulated below in accordance with the Infectious Diseases Control Act, while **municipalities** support implementation based on instructions from the relevant prefecture.

The key roles of **prefectures** include:

- Formulation of an infectious disease prevention plan for implementing measures in accordance with the basic policy;
- Implementation of sample testing in each region;
- Collection of infection information in each region and reporting to the Minister of Health, Labor and Welfare;
- Publication of collected information in newspapers, broadcasts, and online;
- Recommendation of health examination for those suspected of infection;
- Recommendation of hospitalization for infected persons;
- Covering the costs of medical examinations, medicines, and so forth, for infected patients;
- Designating medical institutions for Type 1 and Type 2 infectious diseases (by the Governor);
- Operation of health centers; and
- Collaboration with local health research institutes.

The *Community Health Act*, first established in 1947, is also a key piece of legislation on infectious disease control.[166] The Act stipulates important matters related to community health, such as the basic strategies in promoting community health measures and the development and operation of public health centers and municipal health centers. The ***Guidelines for the Promotion of Community Health Measures*** developed in accordance with the Act require each PHC and

[166] MHLW, n.d.1. *Community Health* (in Japanese).

local health institute at the prefecture level to systematically advance preparations against the spread of infectious diseases during normal times, including the preparation of a guidebook that outlines necessary actions required at the prefectural level to manage and respond to a health crisis at regional or municipality levels respectively, and the development of infectious disease prevention plans in accordance with the ***Infectious Disease Act***, as well as the establishment of ***health crisis response plans*** in accordance with the prefectural and municipal level action plans. Since the COVID-19 response, public health centers, local health institutes, and so forth have also been required to develop health crisis response plans.

The ***National Action Plan for Novel Influenza, etc.*** which was formulated in 2013 based on the ***Act on Special Measures against Novel Influenza etc.*** of 2012 calls for the creation of a Q&A (question and answer resource), and the establishment of central call centers, and call centers for prefectures. The law has enacted requests (nonbinding yet powerful government appeals) for the establishment of public safety facilities, requests to refrain from nonessential outings, restrictions on the use of schools, entertainment venues, and so forth, and the implementation of a state of emergency declaration.

Additionally, there are two other key acts: the ***Quarantine Act*** and the ***Immunization Act.*** Established in 1951, the *Quarantine Act* aims to prevent pathogens of infectious diseases not endemic to Japan from entering the country via vessels or aircraft. It mandates that quarantine station chiefs monitor designated infectious diseases and take measures to prohibit the entry of vessels or aircraft without a quarantine certificate. These officials are also tasked with isolating patients and detaining individuals who may be potential carriers of infectious diseases.[167] The *Immunization Act*, established in 1948, seeks to maintain public health and provide prompt assistance for adverse effects from vaccinations. Under this act, municipal mayors are responsible for mandating vaccinations against designated diseases (routine vaccinations) for residents within a municipality and offering remedial measures to those adversely affected by such vaccinations.[168]

4.4 Key Actors

Disaster Medicine

Disaster medicine in Japan is led by disaster-affected local governments with support from the national government, and in close coordination with diverse stakeholders from the public and private sectors. In the event of a large-scale disaster, the medical facilities in the disaster-affected areas, which may include both Disaster Base Hospitals and other hospitals and clinics, begin by treating the injured and coordinating with local designated hospitals and DMATs.[169] This includes providing direct medical care, logistical support, and possibly assisting with the movement of patients to facilities that have not been affected by the disaster. Additionally, first-aid centers and health care support services in the evacuation centers are set up to provide necessary medical, public health (hygiene, and so forth) and psychological care. Upon request from the disaster-affected local governments, national DMAT teams coordinated by MHWL

[167] Japanese Government. *Quarantine Act* (1951): https://www.japaneselawtranslation.go.jp/ja/laws/view/2783#je_ch2at14
[168] Japanese Government. *Immunization Act* (1948): https://www.japaneselawtranslation.go.jp/ja/laws/view/2964
[169] Nerima City Office, n.d. *Evacuation Center Operation Guide* (in Japanese).

◀ Assisting an elderly woman after the 2021 torrential rains in Shizuoka. Photo: © The Japanese Red Cross Society.

are dispatched to provide acute medical care within 48 hours of a disaster, succeeded by more medium to longer-term support provided by JMAT, coordinated by JMA. Among other things, these medical teams help conduct triage, treatment and transport of patients in serious conditions to Disaster Base Hospitals within and outside of the disaster-affected areas.

The disaster response system is coordinated both locally and nationally to ensure effective medical care is provided from both within and outside affected areas. The Central Disaster Management Council,[170] chaired by the Prime Minister and inclusive of all cabinet ministers, sets the nation's disaster management strategies. The implementation of these strategies falls to the relevant ministries and agencies. In the event of major disasters, the Cabinet Office takes on the crucial tasks of collecting and disseminating trustworthy information, briefing the Prime Minister, initiating the emergency management system that encompasses the Government's Disaster Management Headquarters,[171] and overseeing the coordination of disaster response efforts across extensive areas.[172] The local government bodies, including municipalities, prefectures, and special wards, take the lead in the affected regions, mobilizing public health care facilities to provide immediate medical care.[173] Table 4.3 provides a summary of these key stakeholders.

[170] Cabinet Office, Disaster Management, n.d.2. *What We Do.*
[171] Article 11, *Basic Act on Disaster Management:* https://www.japaneselawtranslation.go.jp/ja/laws/view/4171
[172] Cabinet Office, Disaster Management, 2005. *Mission of the Cabinet Office, Disaster Management in Japan.*
[173] Article 51 and Article 86-6, 86-7, *Basic Act on Disaster Management:* https://www.japaneselawtranslation.go.jp/ja/laws/view/4171

Table 4.3 **Summary of Key Stakeholders for Disaster Medicine**

Stakeholders	Role
National government agencies	The national agency responsible for disaster medicine, **MHLW** sets forth policy, guidance and support for prefectural governments to lead. To enable effective disaster medicine, the national government designates Disaster Base Hospitals, promotes the development and training of medical personnels who can be deployed through DMAT, establishes and maintains the **emergency medical information system (EMIS)** together with prefectural governments to aid timely and accurate exchange of information regarding hospital capacity, disaster status, etc. In the event of disasters, the **Disaster Management Headquarters**[174] is set up and works toward securing a medical team, providing medical care to disaster-affected patients for the short, medium, and long term, and maintaining a medical care provision system throughout different stages of disaster response and recovery. Depending on the size of the disaster, the national government also joins the Disaster Management Headquarters. In the rare event of mega disasters like GEJE, the **Special Disaster Management Headquarters** is set up, led by the Prime Minister.
Local governments	Medical response to disasters is led by the affected **prefectural governments** based on the Regional Disaster Management Plans in close coordination with the affected municipal governments. A disaster management headquarters is set up, together with the national government in the event of a large-scale disaster. Local disaster response entails setting up medical assistance teams through requesting support from MHLW's DMAT and DPAT, JMA's JMAT, the Red Cross society, and so forth.[175] Many prefectures also are training and utilizing their own local DMAT teams to ramp up capacity for emergency medical response in their own municipalities as well as to prepare for deployment upon request during large-scale disasters in other regions. In the event of a large-scale disaster, prefectural governments, together with affected municipalities and health care centers set up Health and Medical Care Coordination Headquarters, responsible for coordinating health and medical activities as well as care of the elderly and social welfare services to support the disaster-affected municipalities.[176] It comprises various government health and medical care units as well as the public health centers. Their key role is to provide advice and support related to understanding the health and medical needs of disaster-stricken areas and coordinating the dispatch of health and medical activity teams. Led by the national government, many local governments are now training Disaster Medical Coordinators with expertise in post-disaster medical coordination to lead the Health and Medical Care Coordination Headquarters activities.

[174] Cabinet Office, n.d.3. *Central Disaster Prevention Council* (in Japanese).
[175] For example, Osaka Prefecture coordinates with: DMAT, DPAT, Red Cross, JMAT, Japan Dental Association, and Japan Nursing Association. For more information see Osaka Prefectural Government, 2024: *Osaka Prefecture's Medical Care Plan* (in Japanese).
[176] MHLW, 2022. *Regarding the Development of Systems Related to Health, Medical and Welfare Activities during Large-Scale Disasters* (in Japanese).

Table 4.3 Summary of Key Stakeholders for Disaster Medicine (cont.)

Stakeholders	Role
Medical institutions and health care providers: Disaster base hospitals, DMAT, JMA	**Disaster Base Hospitals** in Japan play a critical role in the medical response to large-scale disasters, designed to handle the influx of casualties and provide continued medical care. As of 2024, there were 776 designated Disaster Base Hospitals in Japan.[177] The primary role of a Disaster Base Hospital includes responding to serious emergency cases during a disaster, receiving and transporting patients from disaster areas, often by helicopter, and dispatching DMAT[178] in coordination with related institutions. They also provide support to nearby medical institutions and maintain stockpiles of essential supplies like food, water, medicines, stretchers, and blankets to ensure continuity of medical activities in the aftermath of a disaster.[179] During a large-scale disaster, Disaster Base Hospitals within the disaster-affected area become the central coordination point for disaster medicine. They coordinate closely with the national and local disaster response headquarters, first-aid stations and evacuation centers, as well as other Disaster Base Hospitals located outside the disaster-affected areas. **DMAT**, established by the national government, is a system whereby mobile, trained medical teams can be rapidly deployed during the acute phase of a disaster of sudden onset. These teams are small-scale units designed to respond to acute emergencies efficiently and include doctors, nurses, and logisticians with standardized equipment. DMATs operate on the front lines to support Disaster Base Hospitals, which are the primary facilities that coordinate medical response during disasters. Disaster medical teams equivalent to Japan's DMATs are also active in other countries. In Europe, the system is also organized internationally under the EU's Civil Protection Mechanism.[180] Whereas Japan's DMAT mainly operates within 48 hours of a disaster, the EU's Civil Protection Mechanism is not only responsible for long-term disaster relief and support, but also includes monitoring and alerting the public before a disaster occurs, as well as raising awareness about disaster prevention. Also, in contrast to the model of DMATs in the US,[181] Japan's approach emphasizes a more compact and specialized team composition. US DMATs, part of the National Disaster Medical System (NDMS), often involve larger teams with a broader range of medical and support personnel, including pharmacists, paramedics, and mental health professionals. This difference reflects a divergent operational philosophy: whereas the Japanese DMATs focus on rapid deployment and efficiency in acute settings, the US DMATs are structured to provide a more comprehensive range of medical services, often in environments where health care infrastructure is severely compromised or nonexistent. The US teams are also equipped to stay longer in disaster zones, offering sustained medical care, whereas Japanese DMATs are primarily designed for quick, initial medical response.[182] Thus, what can be seen from this comparison of other countries is that Japanese DMATs focus on being more mobile during more focused target periods. There is a context in each country in which each of these characteristics can be appropriately harnessed.

[177] MHLW, 2024. *List of Disaster Base Hospitals (1 Apr. 2024)* (in Japanese).
[178] DMAT, n.d. *About DMAT* (in Japanese).
[179] MHLW, 2023d. *Requirements for Designation as a Disaster Base Hospital* (in Japanese).
[180] European Commission, 2024. *EU Civil-Protection Mechanism.*
[181] U.S. Department of Health & Human Service, n.d. *Disaster Medical Assistance Teams.*
[182] Fuse and Yokota, 2010. *An Analysis of Japan Disaster Medical Assistance Team (J-DMAT) Deployments in Comparison with Those of J-DMAT's Counterpart in the United States (US-DMAT),* Journal of Nippon Medical School.

Table 4.3 Summary of Key Stakeholders for Disaster Medicine (cont.)

Stakeholders	Role
Medical institutions and health care providers: Disaster base hospitals, DMAT, JMA	***Disaster Psychiatric Assistance Team (DPAT***) establish in 2013 by MHLW, which is a team of psychiatric doctor, nurse and coordinator, dispatched to the disaster-affected prefecture within 48 hours to provide support in setting up headquarters functions, conduct needs assessments, and respond to acute-phase psychiatric needs. Other types of medical assistance teams are also emerging, such as for medical coordination assistance, social welfare assistance, etc. **The Japan Medical Association Team (JMAT) and prefectural medical associations** are key organizations within Japan's health systems. The JMA, a national body, represents medical professionals across the country, advocating for their interests, setting ethical standards, and contributing to health policy development. Prefectural medical associations, functioning at a regional level, similarly represent doctors in their respective areas, focusing on local health care issues and coordination among medical practitioners. During the COVID-19 pandemic, these associations played crucial roles. They acted as vital communication links between health care providers and government authorities, facilitating the dissemination of information, guidelines, and updates related to COVID-19. They advocated for the needs and protection of health care workers, ensuring adequate supply of personal protective equipment and safe working conditions. Additionally, these associations were instrumental in public health education, helping to spread awareness about the virus, its prevention, and treatment options. By representing the collective voice of medical professionals, they were able to influence policy decisions and contribute to the strategic planning of the pandemic response at both national and regional levels.
Emergency services	**Emergency responders** including firefighters, paramedics, and the self-defense force, etc., provide immediate assistance during disasters, such as search and rescue operations and medical care.
Academic and research institutions	**Universities, research institutes, and academic organizations** contribute to disaster preparedness and response through research, education, and training programs for health care professionals and emergency responders.
Community and volunteer groups	**First-aid centers** and **health care support services in the evacuation centers** are responsible for continued health care for the community, including medical, public health (hygiene, etc.) and physiological care.
Private sector	Most **hospitals, clinics, and pharmacies in** Japan are privately-owned entities, all of which are key players in disaster medicine. Additionally, local governments are actively seeking opportunities for partnerships with the wider private sector. For example, in Chiyoda Ward, Tokyo, the city has established an agreement regarding cooperation in transporting injured and sick people during disasters with a local bus and taxi company and a private emergency transport and nursing taxi service company, in view of the potential shortage of medical transport vehicles in the event of a large-scale disaster.[183]

Source: Authors' elaboration based on multiple sources (see references).

[183] For more information, see Chiyoda City, 2022. *Press release on first collaboration with private emergency services company* (in Japanese).

Box 12. Private Sector Partnerships ensure effective medical care in the event of a disaster

In recent years, there has been a growing interest on the part of the private sector in disaster risk management and preparedness, and proactive engagement, resulting in several innovative approaches for business continuity and resilience, in partnership with organizations and government.

For example, in the Tokyo Station area, a real estate company, a hospital, and a pharmacy have established an agreement for joint post-disaster response.[184] In this regard, Mitsubishi Estate Company, one of the real estate developers in this district, has signed an agreement with St. Luke's International Hospital and Ain Pharmacies Inc. to enhance medical cooperation during disasters. Under this agreement, the hospital's medical team will provide triage services on the first floor of the atrium, while Ain Pharmacies will stock and manage necessary medical supplies in advance for distribution during emergencies.

Additionally, Chiyoda Ward has entered into a cooperative agreement with Mitsubishi Estate Co., Ltd. and other building owners for approximately 30 buildings around Tokyo Station to serve as facilities to accommodate people who have difficulty returning home. In the event of a sudden disaster, such as a direct earthquake in the capital, these facilities will be available to accommodate those unable to return home because of train cancellations.[185]

Infectious Disease Control

Japan's infectious disease control has been led by the national government and coordinated with diverse stakeholders. The CAICM and MHLW take the lead responsibility for infectious disease control and conduct research and policy-making based on gathering information on international trends and risks, developing border control strategies, and managing domestic spread of infectious diseases and ensuring the provision of patient care, by providing guidance and support to the prefectural governments.[186] In a large-scale infectious disease outbreak resulting in a pandemic, diverse stakeholders are mobilized for management and response. Treatment and care for infected patients takes place in hospitals and clinics, centered around the Designated Infectious Disease Medical Institutions. Vaccine and treatment development and distribution are managed by the government, public health centers, and pharmaceutical companies. Public health education and guidance on good practices to avoid infections are led by MHLW, local authorities, and public health centers. These efforts are also supported by the National Institute of Infectious Diseases (NIID), and local health departments that collect and analyze key data related to infection status. Table 4.4 provides a summary of these key stakeholders.

[184] R.E.port, 2013. *Collaboration in Medical Stockpiling and Disaster Medical System* (in Japanese).
[185] Mitsubishi Estate Company, 2023. *Sustainability Report 2023.*
[186] MHLW, 2004b. *White Paper on Health, Labour and Welfare. Chapter 2 Toward solving health problems associated with modern life* (in Japanese).

Table 4.4 Summary of Key Stakeholders for Infectious Disease Control

Stakeholders	Role
National government agencies	**MHLW, the Cabinet Secretariat and CAICM:** During the COVID-19 pandemic, MHLW and the Cabinet Secretariat played crucial roles in addressing the crisis. The MHLW was at the forefront, formulating health policies, overseeing medical responses, and coordinating with various health institutions. The Cabinet Secretariat, on the other hand, was instrumental in cross-ministerial coordination, ensuring a cohesive governmental response. This period of intense crisis management highlighted the need for a more specialized agency. Consequently, the establishment of CAICM was proposed.[187] This new agency is intended to streamline and enhance Japan's ability to respond to infectious disease emergencies, building on the lessons learned during the pandemic. (See Box 13)
Local governments	**Prefectural Government, Disaster Medical Assistance Team (DMAT) and Japan Medical Association Team (JMAT)**: In the event of a pandemic, prefectural governments coordinate with the national government and municipalities to secure sufficient medical capacities. During the COVID-19 pandemic, DMAT was dispatched based on prefectural governments' request or upon direction from MHLW to support medical staff to respond to the COVID-19 clusters at medical facilities and geriatric care facilities, and JMAT was dispatched based on the prefectural medical association's request to care facilities for people infected with COVID-19 to take care of the patients, as well as being involved in PCR testing at testing centers.[188] **Municipalities and Public health centers (PHCs):** In Japan, public health centers, known as "hokenjo," traditionally play a pivotal role in maintaining community health. Their usual tasks encompass a range of public health services, including routine health checks, communicable disease control, and health education (see section 3.1). Among their many duties, controlling infectious diseases is a key focus. For instance, in the case of tuberculosis, PHCs are in charge of isolating patients, conducting health check-ups for those in close contact with infectious tuberculosis patients, and subsidizing medical expenses for tuberculosis treatments. They are also responsible for controlling food poisoning, which includes conducting surveys to trace suspicious foods and laboratory testing of samples from patients.[189] When the COVID-19 pandemic emerged, these centers adapted rapidly to undertake extensive contact tracing, testing, and coordinating local responses to contain the virus. The public health nurses at PHCs provide various services to patients, including consulting services and providing information about infectious diseases.[190] PHCs in each municipality are responsible for surveillance and reporting the number of cases of designated infectious diseases to the prefectural government, and prefectural governments then report it to the MHLW through an online system.[191]

[187] Prime Minister's Office, 2023. *Inauguration Ceremony of the Cabinet Office for Crisis Management of Infectious Diseases, 1 Sept. 2023* (in Japanese).
[188] Nikkei Medical (2021). *Covid-19 is also a Disaster! DMAT Mobilized for Cluster Countermeasures* (in Japanese). PCR = polymerase chain reaction.
[189] Katsuda *et al.*, 2011. *Structure and Roles of Public Health Centers (Hokenjo) in Japan.* Nagoya Journal of Medical Science.
[190] Kanzaki, 2020. *Report on Public Health Nursing Activities* (in Japanese).
[191] MHLW, 2014. *Surveillance of Infectious Disease Outbreak Trends* (in Japanese).

Table 4.4 Summary of Key Stakeholders for Infectious Disease Control (cont.)

Stakeholders	Role
Medical institutions and health care providers	**Designated Infectious Disease Medical Institutions / Hospitals:** In Japan these are medical institutions specialized in treating specific infectious diseases, designated by the national government. As of 2023, there are 352 medical institutions equipped with expert knowledge, treatment capabilities, and isolation facilities, prepared to admit and treat patients with infectious diseases that pose a significant public health risk.[192] During the COVID-19 pandemic, not only these designated hospitals but also regular hospitals responded to the crisis, and the system has been strengthened based on the experience gained from the pandemic (see Box 14). **Hospitals and clinics:** Throughout the COVID-19 pandemic, hospitals and clinics across Japan played a pivotal role in managing the crisis. They swiftly adapted to an unprecedented health care challenge, ensuring continuous and effective treatment of both COVID-19 and non-COVID-19 patients. Hospitals became the front line in treating severe cases, expanding their intensive care units and dedicating resources to COVID-19 treatment, including ventilators and personal protective equipment. Clinics, often the first point of contact for many patients, focused on early detection and management of mild to moderate cases, reducing the burden on hospitals. They also played a key role in public education, advising on preventive measures and managing public anxiety. **JMA and Prefectural Medical Association:** JMA and prefectural Medical Associations have representatives from medical professionals and play a key role in setting the ethical standards as well as contribute to health policy development and dissemination. JMA acted as a communication link between health care providers and government, advocated for health care workers, and played a role in public health education during COVID-19.
Emergency services: paramedics, and the Self-Defense Force, etc.	**Paramedics** play a critical role in preventing the spread of infectious diseases while providing prompt and appropriate medical care to patients. They provide critical care at the scene of an emergency and during transport to the hospital, assess the severity of a patient's condition, decide the most appropriate level of care needed, and coordinate with medical facilities to ensure that patients are transported to facilities that can provide the necessary care. The **Self-Defense Force** was deployed to set up and operate temporal COVID-19 vaccination centers.[193]

[192] MHLW, 2023e. *Designation Status of Designated Medical Institutions for Infectious Diseases* (as of 1 April 2023) (in Japanese).
[193] Ministry of Defense, 2023. *Response to COVID-19* (in Japanese).

Table 4.4 Summary of Key Stakeholders for Infectious Disease Control (cont.)

Stakeholders	Role
Academic and research institutions	**Universities, research institutes, and academic organizations** contribute infectious diseases prevention and response through research, education, and training programs for health care professionals. For example, during the COVID-19 pandemic, Osaka University created a webpage to dispatch information about COVID-19, including relevant public health research and advice.[194] **The National Institute of Infectious Diseases (NIID), and the National Center for Global Health and Medicine (NCGM)** had distinct but complementary roles before the COVID-19 pandemic. NIID, initially established as the National Institute of Health in 1947, focuses on research and public health surveillance.[195] It is known for its advanced research facilities, including the one designated for detailed examination and development of therapeutic agents, for instance, during the 2014 West African Ebola epidemic. The NCGM, on the other hand, has its origins in a temporary army hospital established in Tokyo in 1868. Over the years, through various restructuring and reorganization processes, this facility evolved into the NCGM, officially becoming so in April 2015.[196] It is primarily focused on clinical care and research, particularly into infectious diseases and global health issues. During the COVID-19 pandemic, they played vital roles. The NIID was key in conducting research, analyzing virus strains, and providing critical data for policy-making. The NCGM focused on clinical management of COVID-19 cases and research on treatments. Post-pandemic, a merger of these two institutions[197] is proposed, aiming to create a unified entity that will enhance Japan's research and response capabilities for future infectious diseases. This integration is expected to streamline resources, foster collaborative research, and improve clinical care for infectious diseases, thereby strengthening Japan's overall public health infrastructure. (See more in Box 13)
Community, volunteer groups, and civil society / nonprofit organizations (CSOs / NPOs)	Various **community and volunteer groups** played a key role during the COVID-19 outbreak, to disseminate information on handwashing and social distancing, support workers who had lost their income, identify locations to provide care during isolation to patients, as well as provide support and care to the isolated, elderly, and low-income families, and other vulnerable groups. For example, some schools and civil society organizations continued to provide lunch so that children had a place to eat and share a meal even during the periods when schools were closed (or delivered all lessons online).[198] Some groups helped low-income households by providing support to identify work for those with incomes curtailed or significantly reduced by the pandemic. Another group made proposals to enable the use of the Olympic Village, which was under construction at that time, as an emergency temporary shelter for people rendered homeless by the pandemic, allowing them to receive the government's COVID-related support including relief payments.[199]

[194] Osaka University, n.d. *Information Dispatch about COVID-19.*
[195] NIID, 2011. *National Institute of Infectious Diseases Overview.*
[196] NCGM, 2015. *National Center for Global Health and Medicine – History and Milestones* (in Japanese).
[197] Nikkei Shinbun, 2023. *Establishment of the "Japanese Version of CDC" Responsible for Research and Clinical Treatment of Infectious Diseases, 31 May 2023* (in Japanese).
[198] For more information, see TVAC, n.d. *Tokyo Voluntary Action Center – Civic Activities during COVID-19* (in Japanese).
[199] Nagahata, 2020. *The COVID-19 Pandemic and NPOs.* Meiji University (in Japanese).

Table 4.4 Summary of Key Stakeholders for Infectious Disease Control (cont.)

Stakeholders	Role
Private sector	As mentioned in section 4.1, in Japan, many hospitals, clinics, and pharmacies are privately-owned, yet all are key players in infectious disease control. Private hospitals and clinics provide medical care to infectious disease patients based on their capacity.[200] Private pharmacies[201] provide testing kits and medicines approved by the MHLW for infectious diseases.[202]

Source: Authors' elaboration based on multiple sources (see references).

Box 13. Strengthening Japan's Infectious Disease Crisis Management

Japan implemented institutional reforms to involve the scientific community and academia, aiming to ensure that pandemic response decisions are informed by scientific data and expertise.

Before COVID-19, Japan had a number of ministries and agencies with different responsibilities for infectious disease control[203] (see section 4.2), but a couple of months after the first COVID-19 infection case was confirmed in Japan, the government established a designated team under the Cabinet Secretariat, consisting of diverse relevant ministries. Information on vaccines, hospitals, border controls, and so forth, was consolidated on a single website under the Cabinet Secretariat domain, coordinated with a dedicated unit under MHLW.[204]

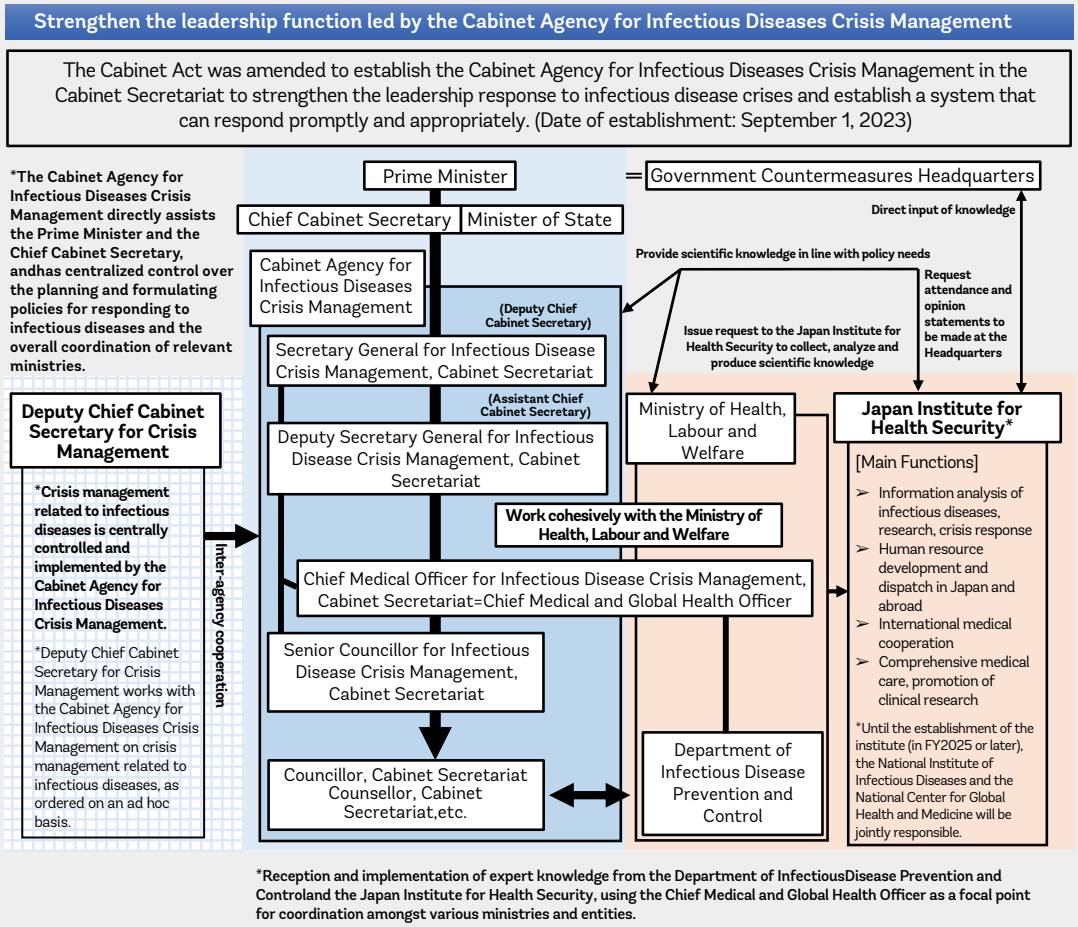
This coordination mechanism was institutionalized in 2023 through the establishment of the ***Cabinet Agency for Infectious Disease Crisis Management (CAICM)***[205] (Figure B.13.1), which has the authority to plan and draft important cabinet policies and coordinate all administrative divisions, as well as deliver practical trainings to enhance preparedness and response.

Likewise, the COVID-19 response highlighted the need to establish an enhanced information-sharing mechanism between the National Institute of Infectious Diseases (NIID), in charge of the research on infectious diseases, and the National Center for Global Health and Medicine (NCGM), responsible for treating patients. The Japanese government decided to establish the ***Japan Institute for Health Security*** (Figure B.13.1), expected to be fully operational by the end of the fiscal year 2025, by unifying NIID and NCGM.[206] It is responsible for carrying out investigation and research, providing medical treatment, international cooperation, and staff training on infectious and other diseases.[207]

[200] Chiba, 2023. *Accepting More COVID-19 Patients after the Transition to Category IV: More Private Practitioners Are Seeing COVID-19 Patients.* m3.com (in Japanese).
[201] Japan Pharmaceutical Association, 2024. *Information on Pharmacies That Stock COVID-19 Test Kits* (in Japanese).
[202] MHLW, 2020d. *Regarding the Handling of Oral Antiviral Drugs (Paxlovid® Pack) for Covid-19* (in Japanese).
[203] For example, MHLW has authority over hospitals; the Fire and Disaster Management Agency under the MIC oversees emergency medical services; MLIT has jurisdiction over roads for emergency vehicles and airports for quarantine.
[204] The website (https://corona.go.jp/) was later integrated in the Cabinet Agency´s website: https://www.caicm.go.jp/index.html. Available in English at: https://www.caicm.go.jp/en/about/index.html.
[205] Established on 1 September 2023. For more information, see Prime Minister's Office, 2023 (in Japanese).
[206] Act for the Institute for Health Security (MLHW, 2023) (in Japanese): https://www.jstage.jst.go.jp/article/jjphn/9/3/9_197/_article/-char/en. Outline of the Act for the Institute for Health Security (Ministry of Justice): https://www.japaneselawtranslation.go.jp/outline/78/905R425.pdf
[207] Prime Minister's Office, 2022. *COVID-19 Disease Control Headquarters (93rd Session)* (in Japanese).

Box 13 (cont.)

Figure B.13.1 Crucial National Governance Mechanisms of the Cabinet Agency for Infectious Disease Crisis Management (CAICM) and the Japan Institute for Health Security



Source: Adapted from CAICM, Strengthen the leadership function led by the Cabinet Agency for Infectious Diseases Crisis Management: https://www.caicm.go.jp/en/about/index.html

4.5 Key Health Systems Developments since the COVID-19 Pandemic

Key regulatory and institutional reforms

The experience of the COVID-19 pandemic response since early 2020 catalyzed a suite of regulatory reforms to further strengthen the resilience of the Japanese health system. Financial subsidies were provided to support hospitals in creating isolated spaces and staffing, balancing the treatment of COVID-19 and non-COVID-19 patients. Recognizing the complexities involved in hospital procedures during a pandemic, Japan initiated long-term strategies including the development of an advanced coordination mechanism. This involved amending laws to establish agreements between prefectures and medical institutions for securing hospital beds and outpatient care in anticipation of future pandemics. The plan included setting numerical targets for medical care delivery and imposing obligations on public medical institutions to enter

agreements, while encouraging private hospitals to do the same. This comprehensive approach sought to enhance agility and effectiveness in the health systems, both in immediate response and long-term preparedness for health emergencies.

Box 14. Financial and Legal Measures to Increase Surge Capacity at Hospitals

Agile and flexible health care policies are necessary to improve the resilience of health systems.

In Japan, there are specialized medical facilities known as Designated Infectious Disease Medical Institutions or Hospitals, which play a critical role in the country's infectious disease control. These hospitals are part of a system established under *the* ***Act on the Prevention of Infectious Diseases and Medical Care for Patients with Infectious Diseases,***[208] tasked with admitting and treating patients with highly infectious diseases.

This designation meant that patients and suspected cases of COVID-19 were generally required to be admitted to Designated Infectious Disease Hospitals.[209] However, the law does also state that in emergencies or other unavoidable circumstances, patients may be hospitalized in other hospitals or clinics as determined by prefectural governors. In fact, during the COVID-19 outbreak, the capacity of these Designated Infectious Disease Hospitals was limited,[210] given the speed of spread of the virus. Therefore, the country had to rely on the capabilities of other hospitals,[211] so the government made the entire country aware of the legal exception that allowed patients with COVID-19 to be admitted to medical facilities other than Designated Infectious Disease Hospitals and called for cooperation among general hospitals and clinics. [212]

In this regard, the government of Japan provided various subsidies to those hospitals that provide beds to accommodate patients during infectious diseases outbreaks.[213] For example, during the COVID-19 pandemic some subsidies were made available to hospitals for the costs of additional medical personnel, as well as preventive public health measures, such as the purchase of personal protective equipment and additional cleaning measures.

To prepare for future pandemics, in May 2023, the government amended the above legislation and established a mechanism for prefectures to conclude agreements in advance with medical facilities for expanding medical response capacity for future pandemics. MHLW expected about 3,000 hospitals nationwide to be involved, and the agreements to be signed by September 2024.[214]

For example, the following reforms took place in health and DRM related regulations, policies and institutions:

- The ***Act Partially Amending the Act on Special Measures against Novel Influenza, etc., and the Cabinet Acts,*** was passed in 2023, to strengthen the national government's leadership to respond to an infectious disease crisis. The Act established a new "***Cabinet Agency for***

[208] *Act on the Prevention of Infectious Diseases and Medical Care for Patients with Infectious Diseases*: https://www.japaneselawtranslation.go.jp/en/laws/view/2830/en#je_ch1at8
[209] Kawasaki, 2020. *Efforts to Secure Hospital Beds for New Coronavirus Infection* (in Japanese).
[210] As of 2023, there were 352 institutions across all prefectures in Japan with a total of 1,751 infectious disease beds (see MHLW, 2023f, in Japanese).
[211] MHLW, 2020e. *Status of Response to New Coronavirus Infection* (5 Nov. 2020) (in Japanese).
[212] MHLW, 2020. *Securing Inpatient Beds for Patients with New Coronavirus Infection (Request)* (in Japanese).
[213] MHLW, 2021f. *Subsidy for Emergency Support Project for Medical Institutions Accepting Inpatients with COVID-19* (in Japanese).
[214] JMA, 2023. *Explanation of the Mechanism for Concluding Agreements on Medical Measures between Prefectures and Medical Institutions* (in Japanese).

Infectious Disease Crisis Management (CAICM)" as a leadership organization in the Cabinet Secretariat **to oversee and coordinate a high-level response with the relevant ministries and agencies in the event of an infectious disease crisis**. During the initial months of the COVID-19 response, Japan's administration quickly created a structure within the Cabinet Secretariat with various ministries and agencies represented and tasked with distinct responsibilities for infectious disease control. This structure enabled smooth coordination among diverse stakeholders by consolidating information for the public and coordinating efforts across government offices. Subsequently, the Japanese government institutionalized this approach by establishing the CAICM. (See Box 13 for more information)

- Recognizing the need for integrated research infrastructure, the ***Act for the Institute for Health Security*** was passed in 2023, mandating the establishment of a ***national institute to conduct research on health crises and management***. The new institute, to be established by 2026, will unify the existing National Institute of Infectious Diseases and National Center for Global Health and Medicine[215] for carrying out investigation and research, providing medical treatment, international cooperation, and staff training with respect to infectious and other diseases. This new institution (Box 13) aims to strengthen Japan's expertise in infectious diseases through combined research and medical services, enhancing the nation's ability to respond swiftly and effectively to future health crises by comprehensively conducting initial epidemiological studies through clinical research at the time of outbreak and spread of infectious diseases.
- The revision of the ***Medical Care Act*** in 2021 added "medical care during outbreaks and spread of emerging infectious diseases" and the revision of the ***Infectious Diseases Act*** in 2022 enabled prefectures and medical institutions to establish prearranged agreements to cooperate and collaborate in the event of an infectious disease outbreak in areas such as the provision of medical care in hospitals, home, and outpatient care, logistical support, and staffing, and so forth. This revision enabled more hospitals to admit COVID-19 patients, significantly increasing available beds.
- In the 2021 update of the ***Disaster Basic Plan*** measures to enable disaster response during an infectious disease outbreak were added, such as: infectious disease countermeasures at evacuation centers; implementation of evacuation center operation drills with consideration for infectious disease countermeasures; promote stockpiling of goods to prevent spread of infectious disease in evacuation sites, such as partitions and masks, and so forth; mechanisms for information sharing and support for infectious disease patients receiving treatment at home; and measures, such as requiring mask-wearing, to keep disaster response staff safe and healthy during post-disaster response during an infectious disease outbreak.
- The scope of ***DMAT deployment***, which is described within the ***Basic Plan for Disaster Management*** developed in accordance with the ***Disaster Countermeasures Basic Act*** (DCBA), was expanded to include pandemics, requiring training and expertise for response to an infectious disease crisis.[216] DMATs were mobilized during the pandemic, and this adaptation reflects Japan's commitment to enhancing its emergency medical response capabilities to address a wider range of crises, including infectious disease outbreaks. (See Box 10 for more information)

[215] MHLW, 2020f. *The National Center for Global Health and Medicine* (in Japanese).
[216] Kondo *et al.*, 2020. *Japan DMAT Operations in the Diamond Princess Cruise Ship: COVID-19 Medical Operation*, American Journal of Disaster Medicine.

- The ***DMAT's Activity Guidelines*** developed by MLWG were revised in February 2020, to include infectious disease response activities in addition to disasters. This was coupled with the establishment of DMAT training programs and human resource development for infectious disease response.[217]
- Japan introduced the ***Gathering Medical Information System (GMIS)*** during the COVID-19 pandemic to address the urgent need for centralized monitoring of medical resources, such as masks and personal protective equipment. This system was developed to complement the existing ***Emergency Medical Information System (EMIS)***, focusing on the real-time tracking and allocation of essential supplies during the health crisis. GMIS represents a key policy milestone in Japan's strategy to efficiently manage and distribute critical medical resources during emergencies, ensuring rapid and effective response to evolving health care needs (see Box 15).

Box 15. Data-driven Policy Making and Resource Distribution through Digital Platforms

Digital platforms can be powerful tools for timely and effective information sharing among stakeholders who work during emergencies.

In 1995, Japan introduced the **Emergency Medical Information System (EMIS)**, a digital dashboard that enables hospitals and emergency workers to share real-time information and determine where patients can be transported during evolving emergency situations **(**Figure B.15.1).[218] EMIS allows medical institutions to access information being updated in real time, as well as communicate their operational status and needs in a timely manner. EMIS also includes smartphone apps[219] for reliable communication, overcoming fixed internet line limitations during disasters.[220] Medical institutions nationwide are tasked with prepopulating EMIS with basic information, such as number of available hospital beds and status of essential lifelines (such as water supply and private power-generation systems), all of which can be updated in real time during emergencies.

While EMIS has proven very useful for consolidating medical resource information during emergencies, it did not adequately share certain essential data during the COVID-19 pandemic, such as the inventory of masks and goggles. Hence, the **Gathering Medical Information System (GMIS)** was developed to centralize and manage this crucial information. The MHLW is currently considering improvements to make the system even easier to use, such as eliminating duplicate information entry between EMIS and GMIS by linking the two systems (Figures B.15.1 and B.15.2).[221]

[217] DMAT, 2022. *Japan DMAT Activity Guidelines* (in Japanese).
[218] MHLW, n.d.2. *Wide-Area Disaster and Emergency Medical Information System (EMIS)*, NTT Data Corporation (in Japanese).
[219] EMIS, 2020. *How to Use the Smartphone Application <EMIS>* (in Japanese).
[220] Okayama Prefecture, 2020. *Emergency Medical Information System for Disaster Medical Services (EMIS) Input Manual* (in Japanese).
[221] MHLW, 2021g. *About EMIS and GMIS* (in Japanese).

Box 15 (cont.)

Figure B.15.1 EMIS: Medical Information Management System for Emergency Coordination

An important tool for medical institutions to disseminate the safety status and information of their hospitals during disasters

Various entities, including medical institutions, Disaster Medical Assistance Teams (DMAT), medical associations, fire departments, and government agencies, input and access information. By sharing this information, they build an appropriate support system.

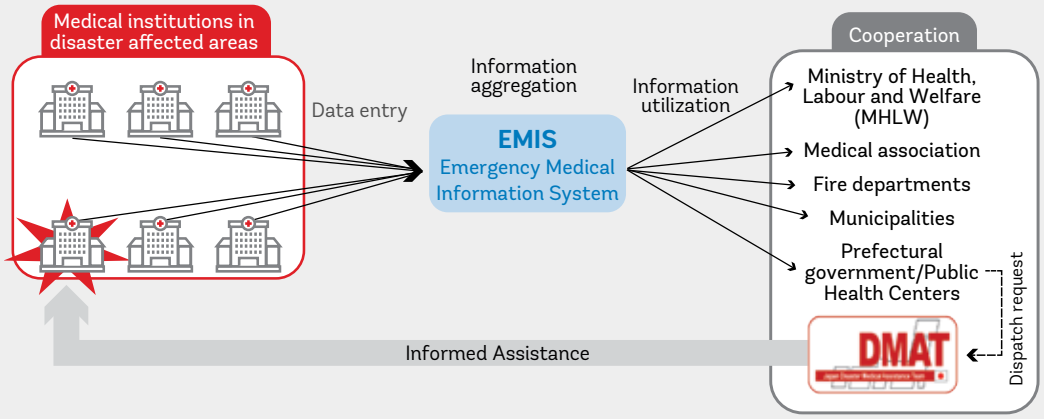
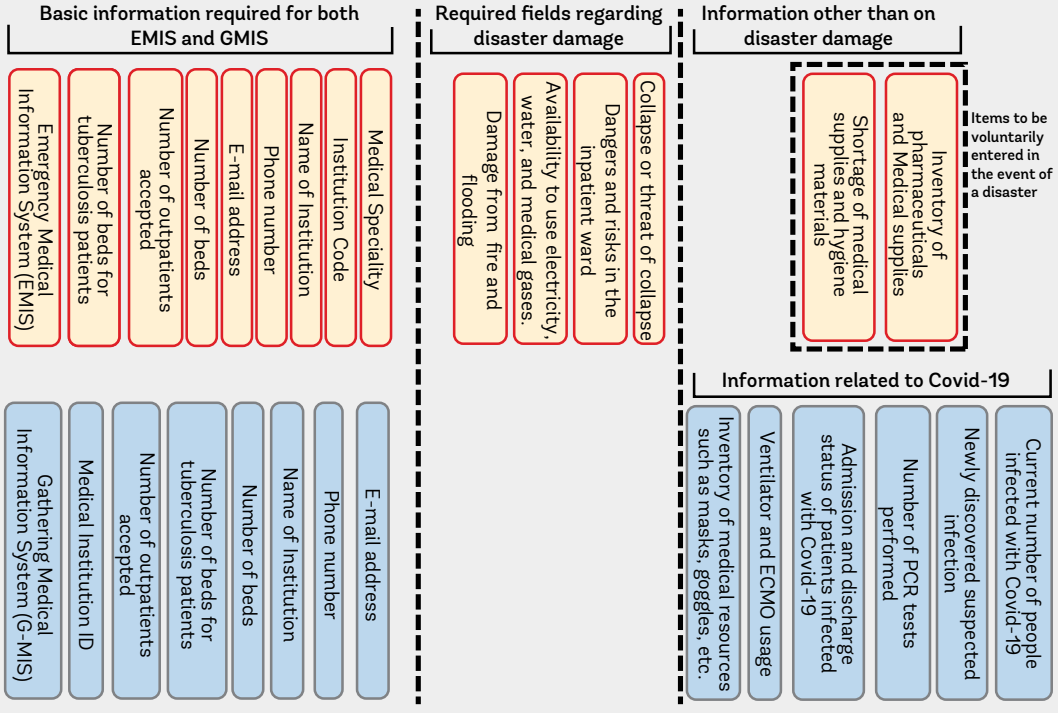


Figure B.15.2 Information Managed by EMIS and GMIS

Key information required to be entered in EMIS and G-MIS



Source: Adapted from MHLW, 2021g.

4.6 The Road Ahead

Disaster Medicine

In preparation for the next large-scale disaster expected in Japan, emergency medicine is working to expand its capacities through improved collaboration and coordination between medical, public health, and social welfare sectors, as well as multisectoral partnerships within the community. GEJE highlighted the need for a broader long-term disaster response—coordination and collaboration between medical, public health, and social welfare is crucial. For example, emergency shelter facilities must be designed and operated in a manner that not only facilitates access to medical care but also maintains a safe, healthy and sanitary environment for all evacuees irrespective of age, identity or personal circumstances (thus plan, for example, for the presence of children, or the elderly). Furthermore, collaboration with social welfare care providers is critical in ensuring that people with special care needs can access evacuation centers that are safe, healthy, and sanitary. In recognition of the need for dedicated specialized professionals to foster inter-agency coordination within and outside of the disaster-affected area, Japan has been training a cohort of Disaster Medicine Coordinators since 2014.[222] Coordinators are equipped with the capacity and mandate to ensure that comprehensive coordination of public health and medical activities can be carried out appropriately in disaster-affected prefectures and municipalities in the event of a large-scale disaster.

Enhancing disaster preparedness across diverse health-related service providers—especially in nondesignated hospitals as well as nursing care facilities—is key to strengthen the comprehensive resilience of Japan's health systems. It is important to respond to crises not only in designated disaster hospitals and clinics but also to enhance the preparedness, response capacities, and business continuity of the entire health system. GEJE highlighted the importance of strengthening the capacity of nondesignated hospitals and integrating them into local medical continuity planning to avoid and better manage concentration of medical response activities in the designated hospitals. Nursing care facilities often house elderly individuals and those with disabilities or chronic illnesses, making them particularly vulnerable during disasters.[223] These residents may have limited mobility or require specialized medical attention. MHLW decided to include disaster preparedness considerations in the April 2021 revision of nursing care facility compensation in order to enhance the disaster response capabilities of nursing care facilities.[224] Nursing care facilities are now obligated to establish a system that will ensure the continuous provision of necessary nursing care services in the event of an infectious disease or disaster, and are required to formulate plans, conduct training, and conduct drills and simulations accordingly.

[222] For more information, see MHLW, 2022g. *Overview of Disaster Medicine for the Formulation of the 8th Medical Plan* (in Japanese).
[223] Rich *et al.*, 2020. *Japan's Deadly Combination: Climate Change and an Aging Society*, The New York Times, 9 July 2020.
[224] MHLW, 2021h. *Major Items in the FY2021 Revision of Nursing Care Compensation* (in Japanese).

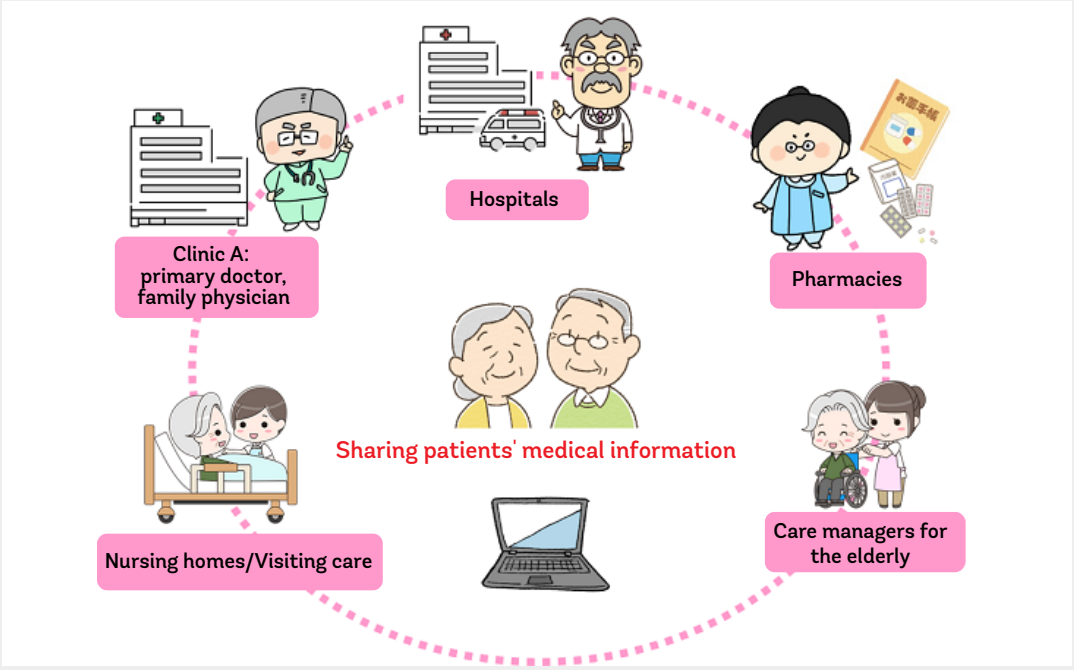
Box 16. Promotion of the Regional Electronic Health Record Medical Sharing Network

Digitized medical information at the local level can help improve the efficiency of community health care services during emergencies.

The **Electronic Health Record (EHR) Medical Sharing Network** is a system that allows the sharing and viewing of patients' medical information among hospitals, clinics (medical and dental), pharmacies, home nursing care providers, home care providers, and other organizations, based on the patient's consent at prefecture level (the Regional EHR) as well as within local medical information partnership networks. Such a system can be helpful when hospitals or clinics lose power and cannot otherwise access digital medical records of patients, or when a citizen has lost their paper-based health records or insurance cards during disasters. During the recent pandemic, when a hospital without a specialist in respiratory medicine needed to diagnose a patient with COVID-19, the system shared test and image data with a specialist at a partner medical institution and asked for a diagnosis.[225]

Following the 2016 earthquake, Kumamoto prefecture's system has grown to be one of the largest network systems, with 741 participating facilities and over 121,000 patients, as of January 2024 (Figure B.16.1).[226]

Figure B.16.1 Kumamoto Medical Network, a Management Platform for Patient Data.



Source: Kumamoto University Hospital 2022: https://www.kuh.kumamoto-u.ac.jp/dept/img/e13_01.pdf

[225] MIC, 2020d. *FY2016 Second Supplementary Budget Operational Status of the "Cloud-Based EHR Enhancement Project"* (in Japanese).
[226] *Source:* Kumamoto Medical Network. Available (in Japanese) at: http://kmn.kumamoto.med.or.jp/

◀ Members of the DMAT simulate assisting an injured medical patient during Kanagawa Prefectural Government's (KPG) "Big Rescue" disaster drill. Photo: U.S. Navy photo by Personnel Specialist 2nd Class Kegan E. Kay/Released

Infectious Disease Control

Infectious disease management is starting to be better integrated within the process of disaster response and recovery in local governments and medical institutions. Japan experienced severe flood and earthquake events where post-disaster response and reconstruction efforts had to take place during the COVID-19 pandemic or at the peak of seasonal flu virus. Learning from these events, Japan is now urging local governments, medical institutions and businesses to review disaster management and business continuity plans, with a view to how best to mitigate the spread of infectious diseases in evacuation centers and medical facilities. These include the reconsideration of evacuation center locations and layouts in accordance with the ***Guidelines for Opening and Operating Evacuation Centers in Consideration of New Coronavirus Infectious Disease Countermeasures***, as well as updating the content of stockpiles, and so forth.[227]

Developments since COVID-19 pandemic

National governments may need to step up to take control of severe and unprecedented emergencies over extensive areas to enable the efficient coordination across all relevant areas and sectors and make rapid decisions and develop required policies. This was needed for the pandemic and may well be needed again, during massive future disasters. In Japan, all stakeholders have shared and differentiated responsibilities for disaster risk management and response. Nevertheless, in line with the national decentralization policy, the local government is normally designated as the key decision-making body to lead post-disaster response efforts

[227] For more information, see Cabinet Office, Disaster Management, 2020, *Guidelines for Opening and Operating Evacuation Centers in Consideration of New Coronavirus Infectious Disease Countermeasures* (in Japanese).

in accordance with their DRM plans and BCPs. Meanwhile, however, given recent experience of large-scale, cross-regional disasters, a need is emerging for higher level coordination and response. The COVID-19 pandemic further highlighted this need for a fit-for-purpose disaster response coordination mechanism.

Box 17. Effective Public Health Communication using Digital Technology

Tailoring communication strategies to different ages and demographics is important—using a mix of traditional media and digital platforms—to reach the whole population, and protect the most vulnerable.

In an era of digital communication, public health needs to adapt to current trends, by effectively using the media channel that most people, especially the younger generations, use nowadays. The Japanese government's information sharing used to be more conventional, but the pandemic marked a major shift toward the government actively reaching out to the public through online media, as well as directly answering questions from the public using social media,[228] a critical point given the nature of online media,[229] where specifically targeted audiences need to be reached. Furthermore, to effectively reach online audiences (not uncommonly oversaturated with information), the government has actively used signages[230] and collaborated with celebrities.[231] For example, high-ranked government leaders appeared alongside extremely successful online influencers to convey vital messages and answer the concerns of young people through dialogue.

Specifically, during the COVID-19 pandemic, one of the main challenges for the government to contain the spread of the virus, was how to encourage behavioral change, particularly among young people. Given that Japanese youths tend to spend more time watching online media than traditional media such as TV and newspaper,[232] the government streamed the official press conference live through online media and Social Network Services. From June to August 2022, the government also held a "Youth Work Session on Public Relations for Infection Control".[233] Through interviews and private surveys, it was revealed that younger generations tend to watch videos at double speed to get more information, while feeling that time is wasted on videos that are not fast enough.[234] In order to respond to such phenomenon, the government also posted short, punchy videos online.[235]

[228] MIC, 2020b. *Strengthen Information Dissemination, Information Dissemination by Government, White Paper on Information and Communication 2020* (pp. 141–142) (in Japanese).
[229] Onodera, 2018. *Public Relations in the Age of Social Media*, J-Stage (in Japanese).
[230] MIC, 2020c. *Request for Distribution of Information on COVID-19 to Digital Signage-Related Industry Associations.* Press release (in Japanese).
[231] YouTube Japan, 2021. *YouTube's Response to COVID-19 (page 6)* (in Japanese).
[232] MIC, 2023b. *Survey Report on Information and Communication Media Usage Time and Information Behavior in 2021,* National Institute of Information and Communications Policy (in Japanese).
[233] Ohta, 2023. *Communication without Strategy: Challenges of Government's COVID-19 Public Relationships,* Japan Society for Corporate Communication Studies (in Japanese).
[234] PR TIMES, 2022. *Sompo Japan has Established the "Generation Z Video Research Division"* (in Japanese).
[235] See Prime Minister's Office of Japan. "Streaming Videos. Asked about Covid-19 Vaccine." Available (in Japanese) at: https://www.kantei.go.jp/jp/headline/kansensho/vaccine_arch.html.

5

Key Insights

This section shares eight key insights into how best to improve the resilience of health systems based on the Japanese experience presented above. Although these insights are not exhaustive, they do encapsulate a number of important lessons from Japan that could be of interest to governments and practitioners from the health and DRM sectors in low- and middle-income countries who face similar challenges.

The following points include links in blue text to the relevant sections above.

Key Insight 1

Establishing a strong foundational health system is crucial for efficient and resilient health systems. Enhancing the capacity to deliver high-quality and accessible care is essential for managing routine demands and enabling health systems to effectively respond to various types of shocks while maintaining continuous service delivery.

- Japan provides a series of good practices to achieve the above, starting with the basic governance structure (section 2.1) of its health sector and associated service delivery mechanisms, including types of health services (section 3.1), financing and budget mechanism (section 3.2), such as the Statutory Health Insurance System (SHIS) that applies unified financing systems to provide quality cares through both public and private service providers, and a compelling set of relevant regulations (section 3.3) and key stakeholders (section 3.4).

Key Insight 2

Institutionalizing a culture of incremental learning from both past and present experiences significantly improves the implementation and impact of health services: this involves post-event assessments (chiefly to identify bottlenecks) that then feed into policy-making and updates, and enhance good practices and lessons learned.

- Japan has been learning from a long history of disasters (section 2.3), including large-scale ones such as GHAE and GEJE, as well as infectious diseases and pandemics section 2.4) that have caused the country to strengthen its response capacity and, with the incorporation of lessons learned, prevention and preparedness.

- Japan's historical evolution of its key regulations (section 3.3) exemplifies how the country has built the foundation of its current resilient health system. This includes the development and integration of Disaster Medicine section 4.1) and Infectious Disease Control (section 4.2), as well as lessons learned from the recent COVID-19 pandemic (section 4.5).

Key Insight 3

Offering proactive support across various facets of the health sector at the national and local government levels helps to create an enabling environment for the people on the frontline as well as compliance mechanism that translate high-level policy objectives into impacts on the ground.

- Japan has established well-defined roles and responsibilities for the different health sector stakeholders at the national, local, and facility levels, including those who are on the very frontline, such as the professionals at the public health centers (section 3.4 and section 4.4).
- The Japanese government plays a key facilitation role in helping medical facilities to be prepared for unexpected emergencies, including a series of ex-ante preparations. This support includes assistance to prepare and develop Business Continuity Plans (BCPs) through legal and regulatory set-ups, as well as providing capacity, guidelines and templates for BCP development, and capacity building (section 3.5 and Box 5). Other prearrangements to facilitate efficient and fast recovery of health services include priority electric power restoration for health facilities (Box 8).

Key Insight 4

Establishing robust mechanisms for ex-ante preparedness, emergency response, and early recovery is crucial for ensuring health sector resilience, minimizing services disruptions and mitigating the impact of future disasters.

- Japan is advancing its efforts to prepare the health sector for potential future shocks, addressing evolving climate-induced impacts (section 3.6). This includes investing in Quality Infrastructure (section 3.5), such as health facilities beyond Disaster Base Hospitals, ensuring continuity, and developing an early recovery mechanism for critical infrastructure that supports medical facilities during emergencies (section 4.6). The COVID-19 pandemic was a pivotal moment in Japan, as elsewhere, prompting reforms designed to enhance preparedness for future pandemics and compounded crises (section 4.5 and 4.6).
- Japan's proactive measures include forming partnerships with the private sector for effective crisis cooperation (Box 12); implementing Business Continuity Plans (BCPs) to optimize facility management and medical supply inventories, thus maximizing resource utilization for future shocks (Box 5); and the establishment of mechanisms for rapid deployment of trained medical professionals within 48 hours for large-scale disasters (Box 10). Additionally, Japan has developed protocols to prioritize power restoration for critical hospitals (Box 8), clear roads for search and rescue operations, and prevent secondary disasters, and ensure the distribution of emergency supplies to support early recovery (Box 2).

Key Insight 5

Investing in the resilience of the buildings—through both structural and nonstructural interventions—is crucial for establishing a resilient health system.

- Japan exemplifies the importance of investing to enhance the quality of the infrastructure, particularly the buildings, that support health services. Japan has implemented foundational regulations and policies on resilient lifeline infrastructure, complemented by an integrated approach to combine both structural and nonstructural measures (section 3.5).
- Japan's long history of dealing with natural hazards such as tsunamis, floods, and earthquakes (section 2.3) has led to the development of a robust approach to infrastructure planning informed by risk data, detailed at local level, as seen in tsunami preparedness (Box 6). Additionally, Japan has established minimum standards for critical facilities, like Disaster Base Hospitals, ensuring that they remain operational during emergencies, such as earthquakes (Box 1).
- A key lesson from Japan highlights the importance of conducting comparative analysis of various measures from both financial and technical perspectives (Box 4). This approach facilitates efficient assessment of damages and the potential impact of disasters, ultimately ensuring the continuity of health services (Box 5).

Key Insight 6

Integrating flexibility and avoiding redundancy are key to creating more efficient, shock-resilient health systems.

- Japan has set exemplary and flexible mechanisms for coordinating and communicating between the key health system stakeholders during emergencies (Box 13). For instance, the deployment of DMAT for early COVID-19 response, despite their mandate on disaster medicine (section 4.4), reflects how leveraging existing mechanisms can enable effective adaptation to new challenges.
- Likewise, examples show how Japan's implementation of multilayered communication mechanisms in medical facilities has provided crucial alternative channels during unforeseen emergencies, highlighting the importance of redundancy in communication (Box 9).
- During the COVID-19 pandemic, Japan developed an adaptive and flexible approach by allowing hospitals that were not designated as infectious disease hospitals to treat COVID-19 patients. This flexibility, supported with additional financial and legal measures, enabled Japan to manage the pandemic more effectively (Box 14).

Key Insight 7

Establishing a strong cross-sectoral coordination and partnership mechanism in normal times, significantly enhances preparedness during emergencies.

- Japan has identified key stakeholders and established alignment and coordination mechanisms (section 3.4 and 4.4) to interact and coordinate with the wider group of stakeholders during

emergencies, including medical suppliers, utility companies, pharmacies, fire departments, and other support entities within the medical industry (Box 12).

- The creation of digital platforms for matching patients with medical facilities has proven highly efficient. (Box 15) Standardized data entry systems facilitate seamless coordination among various professional groups, such as emergency responders and medical workers at hospitals and clinics, ensuring effective collaboration during search and rescue operations and patient care. (Box 16)
- The Japanese experience underscores the importance of defining clear roles and responsibilities of each stakeholder in advance, as well as establishing and testing communication protocols through drills. This approach improves overall coordination and response effectiveness during emergencies (section 4.4).

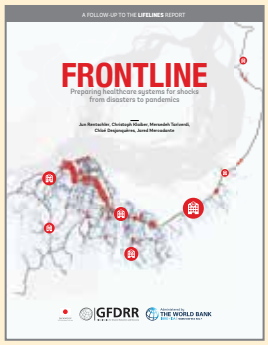
Key Insight 8

Integrating evolving social needs and changes is essential for continuously updating and enhancing health-related policies to maintain resilient health systems.

- Japan's aging and shrinking demographic trends have driven the need to balance sustainable health systems affordably, while enhancing resilience for the elderly and other vulnerable groups who are disproportionately affected by disasters and infectious diseases (section 2.2, 3.2 and 3.6). Recently, Japan has also focused on providing mental and psychological support for disaster survivors, exemplified by the establishment of the Disaster Psychiatric Assistance Team (DPAT) in 2013 (section 4.4).
- In response to increasing climate-induced hazards, such as floods, Japan has accelerated preparedness measures (Box 4). Additionally, the country is investing in technological advancement to improve the efficiency and effectiveness of patient management within medical networks (Box 15 and Box 16).

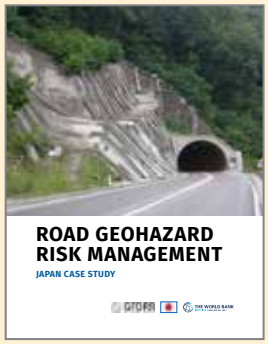
Annex

Relevant reports for the health system resilience in Japan



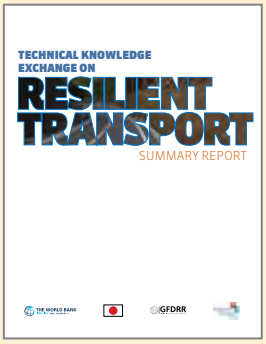
[Frontline: Preparing Healthcare Systems for Shocks from Disasters to Pandemics (PDF) 2021]

This note outlines five principles and priority areas for action to strengthen the resilience of health systems: 1) Foundations, building capacity of health systems; 2) Health care facilities, which must be prepared to meet surge demand during emergencies and protected against shocks; 3) Health care systems, coordinating regional and system-level responses; 4) National emergency management: coordinating health systems with emergency management systems; and 5) Quality infrastructure, including resilient water, electricity, transport, and digital systems.



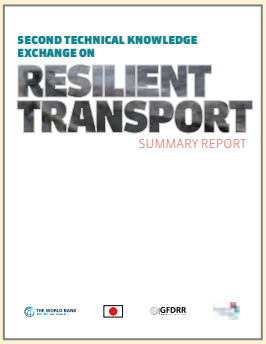
[Road Geohazard Risk Management: Japan Case Study (PDF) 2020]

This report captures Japan's experience in road geohazard risk management and offers a way forward for low- and middle-income countries.



[Resilient Transport Summary Report (PDF) 2018]

In 2017, a Technical Knowledge Exchange (TKX) in Tokyo convened clients and World Bank task team leaders from 16 countries to share concepts and practices on resilient transport, including systems planning, engineering and design, asset management, and contingency programming. Country representatives and World Bank teams learned from one another and from Japan's challenges and successes with large-scale disasters.



[Second Technical Knowledge Exchange on Resilient Transport Summary Report (PDF) 2018]

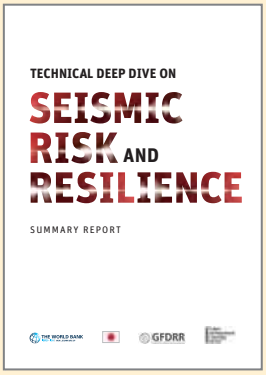
Building on the previous one, the second Resilient Transport TKX took place in Belgrade, Serbia, in 2018. 11 country delegations and a total of 65 participants attended this workshop, showcasing innovative approaches and practical advice for facing the challenges when addressing risk management planning for the transport sector.

[Resilient Water Supply and Sanitation Service: The Case of Japan (PDF) 2018]

Japan has built the resilience of its water supply and sanitation (WSS) services through an adaptive management approach based on lessons learned from past disasters. This experience offers key insights for low- and middle-income countries (LMICs) seeking to sustain and build resilience of WSS services.

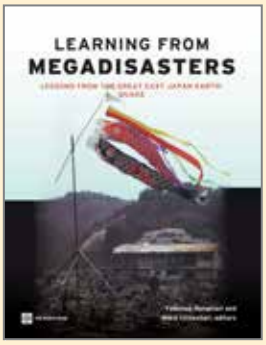
[Converting Disaster Experience into a Safer Built Environment: The Case of Japan (PDF) 2018]

This report describes Japan's incremental approach to developing, implementing, and facilitating compliance with building regulations over many decades. It explains Japan's unique path to developing a policy and legal framework as well as compliance mechanisms that grow out of this framework and that function within Japan's risk profile and climate, culture, and construction practices.



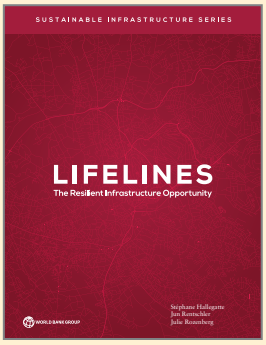
[Technical Deep Dive on Seismic Risk and Resilience Summary Report (PDF) 2018]

This report summarizes the Technical Deep Dive on Seismic Risk and Resilience, which enabled participating countries to learn from Japan's wealth of experience and expertise in the generation, communication, and application of risk information to reduce the human and economic losses caused by earthquakes and tsunamis.



[Learning from Megadisasters: Lessons from the Great East Japan Earthquake (PDF) 2014]

This report consolidates the set of 36 Knowledge Notes, research results of the joint study undertaken by the Government of Japan and the World Bank. It summarizes the lessons learned from the Great East Japan Earthquake and Tsunami and provides guidance to other disaster-prone countries for mainstreaming DRM in their development policies.



[Lifelines: The Resilient Infrastructure Opportunity (PDF) 2019]

This report lays out a framework for understanding infrastructure resilience—the ability of infrastructure systems to function and meet users' needs during and after a shock—and it makes an economic case for building more resilient infrastructure.

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2024 Noto earthquake. Photo: © The Japanese Red Cross Society.

Preparing Health Systems for Shocks focuses on Japan's experiences to showcase how the country incrementally strengthened the resilience of its health system by enhancing its capacity to prepare for, respond to, and recover from crises, drawing valuable lessons from its experience of major earthquakes, floods, and infectious disease outbreaks. This report emphasizes the country's efforts, focused on the intersection of health systems, disaster risk management, and quality infrastructure, integrating these sectors through the development of key regulations, governance mechanisms, and capacity building for all stakeholders involved in strengthening the health system's ability to withstand shocks. It aims to share these historical experiences and early lessons learned from the COVID-19 pandemic with public sector decision-makers and practitioners elsewhere who face similar challenges, providing practical reference material to inform and inspire shock-resilient policy reforms and infrastructure investments.

Today more than ever, the resilience of health systems is crucial to provide lifesaving care during crises such as pandemics, disasters, and other major shocks, while still remaining a highly challenging proposition, as the COVID-19 pandemic reminded us.

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