Chapter 43

Human Resource Development in Disaster Medicine

Field of expertise: International Cooperation in Disaster Medicine, Comprehensive Medicine

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Summary

After the Great East Japan Earthquake, some regions lacked sufficient organizations and functions to manage the many medical support teams that gathered in the disaster area and to coordinate their dispatch over the medium and long term recovery. In order to solve this problem, Tohoku University Hospital is implementing a program to train disaster healthcare personnel who can act as coordinators to unite healthcare teams in the event of a disaster.

Keywords: training program for disaster healthcare personnel as coordinators, disaster healthcare coordination, human resource development, multidisciplinary cooperation

Introduction

In the Great East Japan Earthquake, some regions lacked the organization and functions to manage the many medical support teams that gathered in the disaster area and to coordinate their dispatch over the medium to long term recovery. This chapter outlines the human resource development for disaster medicine that has been implemented since the Great East Japan Earthquake, focusing on Tohoku University Hospital's Conductor-type Human Resources Development Program for Disaster Medicine and Health Care, which was adopted as a subsidized project by the Ministry of Education, Culture, Sports, Science and Technology in 2018.

1: Problems Revealed by the Great East Japan Earthquake

What happened?

The Great East Japan Earthquake was the first large-scale disaster in which the Disaster Medical Assistance Teams (DMAT), established in response to the 1995 Great Hanshin-Awaji Earthquake, were dispatched from all over Japan to the affected areas. The main targets of DMAT at the time were patients who required acute care for symptoms such as crush syndrome (from collapsed buildings), trauma, and burns. However, there were few patients who required this type of care, and there was a high and prolonged need for continuous care for patients with chronic diseases who had lost access to their medical support (Figure 43-1) (Ministry of Health, Labor, and

Welfare, (n.d.). At the time, DMAT was focused on the acute phase of the disaster and was unable to fully meet the medium- and long-term medical needs of the affected areas due to issues such as transitioning to a normal healthcare supply system.

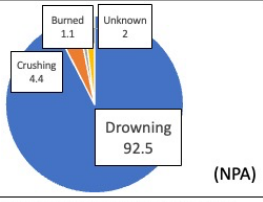
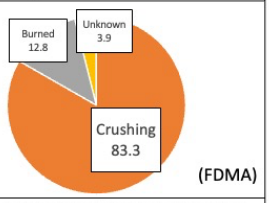
	Great East Japan Eq	Hanshin-Awaji Eq
Number of casualties	Death: 15,520 Missing: 7,173 Injured: 5,388 (National Police Agency, July 1, 2011)	Death: 6,434 Missing: 3 Injured: 43,792 (Fire and Disaster Management Agency)
Cause of death		
Features of medical needs	• Many were killed or missing due to the tsunami disaster, and few were injured. • In the hyperacute phase, it was difficult to understand the needs for life-saving medical care for trauma patients. On the other hand, the need for medical support for patients with chronic diseases has continued for a long time.	• The most common death was due to the collapse of the building. The number of injured was about seven times the number of dead. • There was a high need for hyperacute medical care for trauma patients, including crush syndrome.

Figure 43-1.Characteristics of human damage caused by the Great East Japan Earthquake

The reality of the damage

Of the hospitals operating in the coastal area of Miyagi Prefecture at the time, 5 of 10 hospitals (50.0%) in Ishinomaki City, 1 of 1 hospitals in Onagawa Town (100.0%), 1 of 1 hospitals in Minamisanriku Town (100.0%), and 3 of 6 hospitals in Kesennuma City (50.0%) were inundated (Niinuma & Miyazawa, 2011). Especially in Ishinomaki City, the damage to clinics was large, and 114 out of 158 clinics (72.2%) were inundated. At the Ishinomaki Red Cross Hospital, which provided core support for regional medical care after the disaster in the area, many medical supporters from all over Japan gathered to set up the Ishinomaki Area Joint Relief Team which was led by Dr. Tadashi Ishii (author of this chapter and Miyagi Prefecture Disaster Medical Coordinator) for the medium to long term. The Area/Line System of dividing the disaster area into multiple regions and entrusting the coordination of activities and dispatch in each area to a long-term support team (a line) was established. This has since become the foundation of Japan's disaster medical support system (Ishii, 2011).

2: Paradigms Destroyed by the Earthquake

Conventional wisdom and necessary responses

The need for hyperacute trauma care, the main focus of DMAT at the time, was extremely low in the tsunami disaster, while the need for continuous medical support for chronically ill patients was high. The limitation of DMAT's availability (48 hours), and their inability to quickly set up headquarters as well as command and coordination functions became apparent, and needed to be solved (Figure 43-2) (Ministry of Health, Labor, and Welfare, n.d.). The establishment of prefectural coordination organizations (functions) and disaster medical coordinators to coordinate the dispatch of support teams that meet local medical needs over the medium to long term, including medical support teams other than DMATs, was also an issue. As a result, there was an

increased need to develop human resources capable of coordinating healthcare from peacetime to disaster.

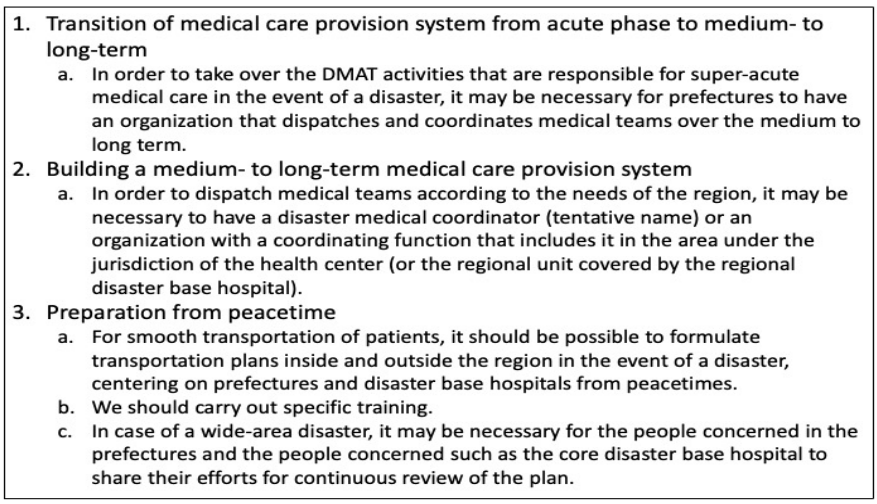


Figure 43-2. Issues related to the medium to long term medical care provision system after the Great East Japan Earthquake

3: A New Approach

Tohoku University in Miyagi Prefecture and Fukushima Medical University in Fukushima Prefecture, both areas severely damaged by the disaster, collaborated to create Tohoku University Hospital's Disaster Healthcare Human Resource Development Coordinator Program (website: https://www.dcnd.hosp.tohoku.ac.jp), which was adopted as a subsidized project by the Ministry of Education, Culture, Sports, Science and Technology in 2018. The purpose of this program is to train human resources that can manage different disaster areas in different phases from a variety of perspectives. It specifically aims to develop human resources that can, 1) effectively respond to all types of disasters such as natural disasters and man-made disasters from the acute to chronic phases, 2) coordinate and implement efficient logistical support, 3) coordinate effectively with other organizations, 4) unite medical personnel from various professions and create a team to maximize their potential, and 5) analyze, research, and develop resilient countermeasures for future disasters. Governments, academia, and private sectors, including Miyagi and Fukushima prefectural governments, the Ishinomaki Red Cross Hospital, Minamisoma City Hospital, and ACT Research Institute for Disaster Medicine, are working together to develop and implement this cross-sectoral practical educational program.

The program targets a wide range of participants, including doctors, dentists, nurses, pharmacists, other medical professionals, firefighters, and healthcare-related administrative personnel. In addition, most of the curricula in the practical training courses allow for open participation of those not enrolled in the program. Students are required to take the Disaster Management Course (Certificate Program, 2 years); however, other courses will also be implemented: the Social Medicine Specialty Training Program (3 years), and Graduate School Programs (Master's Program, 2 years, and Doctoral Program, 4 years). In addition to the acquisition of skills such as efficacy to play an active role in the field and in logistical support, multidisciplinary team activities, and cooperation with other organizations, outcomes include: 1) Tohoku University certificate of completion and registration as Miyagi Prefecture disaster medicine logistic staff, 2) acquisition of certification as a specialist in social medicine, and 3) a master's

degree (in public health or medicine) or a doctoral degree (in medicine). The curriculum emphasizes hands-on training in order to acquire practical skills. The contents of the practical training lectures cover a wide range of topics, from hospital preparedness during normal times (seminar on Organizational Response to Disasters), to the response immediately after a disaster (acute phase activities, disaster healthcare coordination, CBRNE, psychological care, pharmaceutical care, dentistry), to the medium- to long-term responses (disaster public health, logistic support) (Figure 43-3). The curriculum also includes interdisciplinary lectures on how disasters occur (Introduction to Disaster Science) and international disaster response (seminar on International Cooperation in Disaster Management).

	Subjects	Program outline
1	CBRNE response training	(Chemical, biological, radioactive materials, nuclear, and explosives) Experiential seminar to learn how to respond to disasters and emergency radiation healthcare.
2	Disaster healthcare coordination seminar	Acquire the knowledge necessary for proper coordination at the Disaster Health and Medical Headquarters.
3	Disaster healthcare coordination training	Experience actual healthcare and coordination support related to sanitation within the Disaster Health and Medical Coordination Headquarters.
4	Disaster acute phase activity training	Experiential seminar to learn first response skills in the event of a disaster or a large number of casualties.
5	Disaster public health seminar	7 and 8 will be held at the same time. This seminar modifies the humanitarian assistance training course in the disaster area conducted by the Quality and Accountability Network Japan. Here, students will acquire important knowledge about actual support and planning and learn about specific national and local natural disaster cases from the perspective of health management of disaster victims (acute to chronic phase).
6	Disaster public health training	
7	Seminar on organizational response during disaster	Learn about preparations during peacetime (disaster prevention drills, BCP) which are carried out so that organizations such as hospitals can respond appropriately in the event of a disaster.
8	Disaster mental health care training	Experiential seminar that combines the DPAT (Disaster Psychiatric Assistance Team) training course and the PFA (Psychological First Aid: anxiety response and psychological first aid in the event of a disaster)
9	Disaster dispatch seminar	Acquire knowledge and coordination skills necessary for support activities such as dispatching relief teams and DMATs from non-affected areas to the affected areas in the event of a disaster.
10	Introduction to disaster science	Learn from multiple perspectives on non-healthcare disaster fields, such as science behind earthquakes and tsunamis, and gain scientific knowledge related to preparation and evacuation.
11	Disaster pharmaceutical affairs training	Experiential seminar to learn the principles of drug response in the event of a disaster, pharmaceutical triage, and collaboration between pharmacists and other occupations
12	Disaster international cooperation seminar	Acquire knowledge regarding international cooperation activities such as disaster relief and disaster prevention efforts in the event of a disaster overseas.
13	Disaster dentistry	Acquire knowledge about the role of dentists in medical assistance during disasters, such as dental care of victims and identification of corpses using forensic dental techniques.
14	Logistic support training	Experiential seminar on logistic activities necessary in the event of a disaster, such as information management, which includes evacuation shelter assessment, securing communication, etc.

Figure 43-3. Disaster Healthcare Human Resource Development Coordinator Program

3: Achievements and the Future

A new method of disaster science

In the fiscal year of 2019, a total of 27 practical training sessions/lectures were held, with a total of 556 participants. In the fiscal year of 2020, the program was temporarily suspended due to the spread of the COVID-19 infections, but online training resumed on July 18. A major change in perspective is required for disaster medical education in the context of a pandemic, and we are working to establish educational methods that maximize the benefits of new technologies such as online training.

By having a large number of disaster healthcare personnel who are able to see the bigger picture and coordinate personnel at the disaster site itself and at the headquarters supporting the disaster site, we can provide logistical support, and organic cooperation among multiple professions and organizations will become possible, resulting in effective disaster medicine. After

the Great East Japan Earthquake, various natural disasters have occurred in Japan, such as the Kumamoto Earthquake in 2016, the torrential rains in western Japan in 2018, and the torrential rains in July 2020, which have made the development of human resources for disaster healthcare an urgent issue.

Conclusion

Disasters occur at any time and place, and unfairly take the lives of young people. The Great East Japan Earthquake made it clear that it is difficult to predict the occurrence of disasters. So what can we, as medical professionals, do? At the very least, we can pass on our experiences and train people to be prepared and able to respond to disasters so that we do not repeat the same mistakes. It is my hope that many young coordinators will lead disaster healthcare personnel in all directions, so that we can create a disaster healthcare system that can alleviate the suffering of disaster victims as quickly as possible.

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