Role Sharing Between DMAT and JMAT

JMAJ 56(1): 25–29, 2013

Kunio KOBAYASHI*1

Key words Great East Japan Earthquake, Disaster Medical Assistance Team (DMAT), Japan Medical Association Team (JMAT), Post-disaster medical needs, Medical associations in disaster-stricken areas

The Great East Japan Earthquake of March 11, 2011, caused significant casualties and material damage mainly in the 3 prefectures northeast of the Japanese mainland (Iwate, Miyagi, and Fukushima). Physicians in the disaster-stricken areas stood on the frontline of relief efforts and did their best to rescue residents and provide care for them; however, medical care provided to the affected population was still insufficient and prompt medical assistance was required from other areas. Two programs, the Disaster Medical Assistance Team (DMAT) organized by the government and Japan Medical Association Team (JMAT) organized by the Japan Medical Association (JMA), swiftly responded to this need.

Post-Disaster Medical Needs

Disasters in general can be categorized into 3 groups: natural disasters such as earthquakes, tsunamis, volcanic eruptions, typhoons, floods, and drought; human-induced disasters such as conflagrations in cities, factory explosions, and airplane and train accidents; and special disasters such as radiation accidents and terrorism by biological or chemical weapons. The scale of a disaster can vary considerably, and the location of the disaster can alter the situation as well. One common characteristic of disaster medicine, however, is the imbalance between the decreasing medical capacity and the increasing need for care within disaster-affected areas. Additionally, in large-scale disasters such as earthquakes or tsunamis that damage utility lines (e.g., electricity, water system, and gas), advanced care such as dialysis cannot be performed within the affected areas (**Fig. 1**).

Medical needs can significantly vary depending on the circumstances of the disaster area, even within the same type of disaster. For instance, over 80% of those killed in the Hanshin-Awaji Earthquake in 1995 were crushed to death due to collapsed buildings, whereas over 90% of those killed in the 2011 Disaster reportedly died from drowning in the tsunami.

Another characteristic of disaster medicine is the change in medical needs with time. In the hyper-acute period immediately after a disaster, the combined efforts of rescue and medical care are much needed, including the so-called "confined space medicine (CSM)" as well as the triage of the sick and wounded. Because practicing proper CSM requires special training, DMAT provides the needed acute care. During the acute period (1–3 days after a disaster), the main medical need is attending to trauma patients such as those with wounds and burns. Local physicians also participate in this acute care, but DMAT is mainly responsible for the severely wounded or sick patients, including transporting them out of the disaster areas. In the sub-acute phase (after 3 days from a disaster), care should be provided to the sick at shelters. In this phase, the main con-

*1 Chair of JMA Emergency and Disaster Medicine Management Committee. Director of Teikyo Heisei University Graduate School of Health Science, Tokyo, Japan (k-kobayashi@thu.ac.jp).
This article is based on the lecture presented at Disaster Medicine Training Course on JMAT Activities held on March 10, 2012.

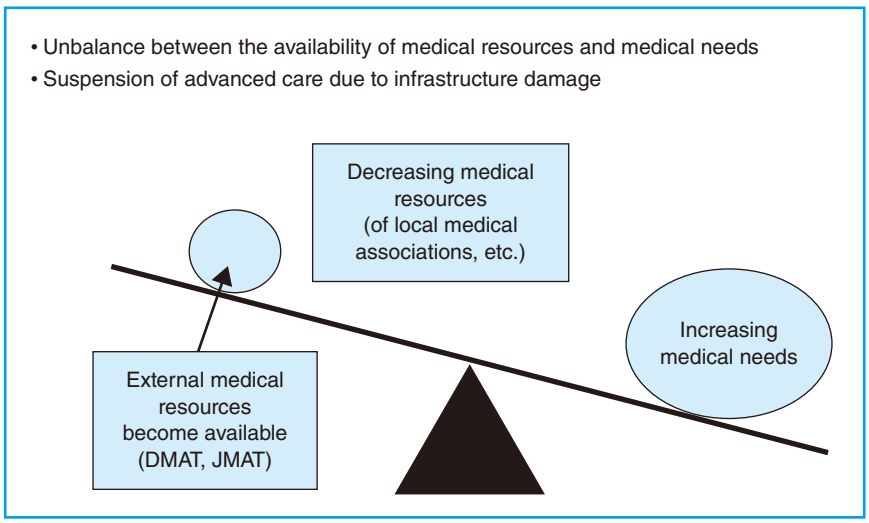

Fig. 1 Characteristics of disaster medicine

cern lies in the possible aggravation of pre-existing conditions, such as hypertension or diabetes, due to stress and absence of regularly prescribed medicine, and in the possible infectious diseases. This sub-acute phase can last from several weeks to several months, and comes to an end as medical institutions in the disaster areas are restored. After this phase, long-term professional care such as rehabilitation and post-traumatic stress disorder (PTSD) care must be provided. PTSD patients especially require long-term follow-up by teams of health professionals, mainly psychiatrists. As described here, medical assistance needs to be provided with the precise understanding of the local medical needs that change with time.

Role of Medical Associations (Physicians) in Disaster-Stricken Areas

Needless to say, the key players in providing medical care in disaster-stricken areas are the medical associations and physicians in these areas. Previous disasters have left many records of the actions of local medical associations. As someone who has been a part of community medicine, it is only natural that a local physician would hope to actively participate in providing health care for the disaster-affected people. Local physicians often immediately resume practice if they themselves and their family are well. The care they can offer may be limited, but they do not have to wait for external medical assistance. Moreover, they have already established personal relationships of trust with local residents, making it relatively easy to precisely understand the local medical needs. The main role of local physicians is providing initial care and triage, and most importantly, serving as coordinators for medical assistance teams from other areas. Support from local medical associations is essential in order for those medical assistance teams that are unfamiliar with the local medical environment to function effectively. Presidents of local medical associations or their representatives would be suitable coordinators.

Role of DMAT

Created when the Hanshin-Awaji Earthquake struck in 1995, DMAT is the disaster relief team program specialized in disaster medicine. Since the Hanshin-Awaji Earthquake, disaster medicine systems in Japan have become systematically organized, with particular interest in 3 main aspects. The first aspect has been the designation of disaster base hospitals; 618 hospitals have been designated as of July 2011, 57 of which have also been designated as core disaster base hospitals that provide educational training. The second aspect has been the launch of the Emergency Medical Information System (EMIS), which have

been already installed in 41 of the 47 prefectures in Japan. Significantly, of the 3 prefectures that suffered damage in the Disaster, Miyagi had not installed EMIS at the time of the disaster (installed in October 2012) and reportedly experienced some trouble in gathering information. The third aspect has been the establishment of the DMAT program.

DMAT refers to the "teams of health professionals trained in mobility for acute care in disaster." In the 1995 disaster, about 500 people reportedly died of trauma, which could have been prevented if the sufficient disaster medical response had been available. In response to this serious tragedy, the Japanese Ministry of Health, Labour, and Welfare (MHLW) launched DMAT. Since it is a national project, DMAT is also part of the national disaster management plan. A total of 882 teams, mainly consisting of physicians and nurses of the disaster base hospitals, are already registered, and more training is underway to reach the target of 1,000 teams. Besides the Japan DMAT project that operates at the national level, regional DMAT projects operate at the prefectural level in Tokyo, Osaka, Kanagawa, Oita, and other prefectures. The goal of each regional DMAT is to respond to major accidents within its jurisdiction. Established in 2004, a year before the launch of the Japan DMAT, Tokyo DMAT is a representative of all regional DMAT projects and involves approximately 700 physicians and nurses from 22 hospitals who are registered as active members.

The DMAT dispatch request is issued from the disaster-affected prefectures to MHLW and the other prefectures. MHLW and the other prefectures then request the response of DMAT designated medical institutions to the DMAT dispatch. Information relating to the disaster is collected through EMIS, and the DMAT dispatch request is made through EMIS, based on this information. Following the Disaster, approximately 380 nationwide teams with 1,800 members operated for 12 days.

The roles of DMAT greatly vary, but its primary aim is providing medical assistance to local hospitals, mainly with triage and medical examinations. Its secondary aim is providing help at actual sites of disaster damage that could involve CSM. Indeed, CSM is the specialty of DMAT; however, CSM was reportedly not much needed following the Disaster. Its third aim is transporting the injured from the disaster areas to nearby hospitals or to a staging care unit (SCU); an SCU is a transport base for the severely injured people and is equipped with a simple medical facility to provide triage and air-transport to distant medical institutions. Accompanying a severe patient through long-range air-transport is also the responsibility of DMAT; following the Disaster, 19 patients were transported by 5 aircrafts with fixed wings and 140 were transported by 16 helicopters. Providing logistic support, such as securing the lines of communication, movement, and medical supplies, is another important role of DMAT.

A DMAT consists of 5–6 members and is characterized by its rapid response and self-efficiency. The members include a combination of physicians, nurses, and other health professionals from many medical institutions, and they are all registered specialists in disaster medicine who have attended professional seminars and received training. DMAT is expected to operate for a relatively short period of time, typically during the first 72 hours following a disaster.

Looking back at the activities of DMAT following the Great East Japan Earthquake, several observations should be addressed. For instance, one of the goals upon establishing DMAT was to provide emergency care, including CSM, to severely sick and wounded patients. However, most deaths in the 2011 Disaster were due to drowning, and there were not as many severely sick and wounded as had been anticipated. Apparently, this unexpected circumstance prolonged the duration of stay of DMAT units and caused a shortage of supplies. It was also difficult to understand the local medical needs in some areas due to the ensuing problems in communication. Moreover, the coordination of wide-range medical relief efforts reportedly experienced issues due to the shortage in headquarter staff who were responsible for coordinating those activities. In light of these issues, some people believe that the previously anticipated operation time frame of 48–72 hours should be expanded to 1–2 weeks, while maintaining the promptness in response. The need to establish a relief system for hospitals that cannot receive assistance until the sub-acute phase is also being considered.

Role of JMAT

The JMAT program is the medical assistance system for times of disaster that JMA recently organized. Medical associations in Japan have been the main players in providing disaster medicine within and outside the disaster areas; however, this involved the efforts of individual medical associations. This recent introduction of JMAT allows JMA to supervise and coordinate medical relief activities, which could provide more efficient and smooth operations. The establishment of JMAT was first considered after the JMA Emergency and Disaster Medicine Management Committee proposed its concept in its March 2010 report. Just as the related subcommittee began preparing training programs for the participants, the 2011 Disaster took place. On March 15, JMA hastily requested the dispatch of JMAT to the prefectural medical associations, based on the subcommittee discussions made thus far. This was a decisive resolution by JMA. Then, on March 17, MHLW requested JMA to dispatch medical professionals to the disaster areas.

Each JMAT typically consists of 4 members: 1 physician, 2 nurses, and 1 coordination staff personnel. The dispatch duration usually ranges from 3 days to a week. The main activities include providing health care at shelters and first-aid stations, assisting at hospitals and clinics in the disaster areas, and providing medical care and health management for in-home patients.

In the Disaster, 1,394 teams were dispatched as of July 19, 2011 (398 teams to Iwate, 647 to Miyagi, 273 to Fukushima, and 12 to Ibaraki Prefectures). The number of dispatched members totaled 6,239: 2,220 physicians, 1,829 nurses, 464 pharmacists, 1,173 coordination staff, and 548 individuals of other professions.

The JMAT dispatch during the 2011 Disaster revealed several issues that needed to be addressed. For instance, JMAT should be recognized by the national government and the collaboration between JMA and the administration should be further promoted to allow for the smooth and strong operation of JMAT. Another major issue that should be raised is the education and training of JMAT participants. Nation-wide training systems must be established with significant help from specialists involved in disaster medicine. Furthermore, information exchange and cooperation with public health centers as well as role sharing and smooth transfer of duties between DMAT and Japanese Red Cross teams are also important in providing medical assistance.

Role Sharing Between DMAT and JMAT

As discussed earlier, DMAT and JMAT clearly have different roles. The main purpose of DMAT is to attend to acute patients with trauma, whereas that of JMAT is to respond to the sick at shelters. In other words, the main role of DMAT is to provide emergency care and hospital assistance in the acute phase, whereas that of JMAT is to provide care for people at shelters and first-aid stations. The time frame of operation for DMAT is during the acute phase (the first 48–72 hours), whereas that of JMAT extends from the sub-acute phase to the chronic phase (3 days to several months).

The organizational settings for DMAT and JMAT programs are very different as well. While DMAT is a national organization of MHLW, JMAT is a private-sector organization associated with JMA. Team constituency is very similar, but the configuration of team members is quite different between DMAT and JMAT. Moreover, DMAT is a national project that employs a registration system, which includes participants who have undergone training and have achieved a certain level of skills. On the other hand, JMAT does not employ a registration system, and JMAT members receive educational training as part of their continuing education. As these differences illustrate, the DMAT and JMAT systems do not compete; on the contrary, they can collaborate and supplement each other to provide better medical assistance in the disaster-affected areas.

Medical care available at disaster areas significantly declines when a disaster strikes. Consequently, DMAT should arrive at disaster areas during this acute phase to provide emergency care for the severely wounded or burned people, and transport them to other areas when necessary. Then, JMAT should arrive at disaster areas to assist local health care by making rounds at shelters and first-aid stations. Within several weeks to months, as local medical services are restored by medical associations and physicians, JMAT should withdraw. The important issue here is to provide the smooth transfer of medical care

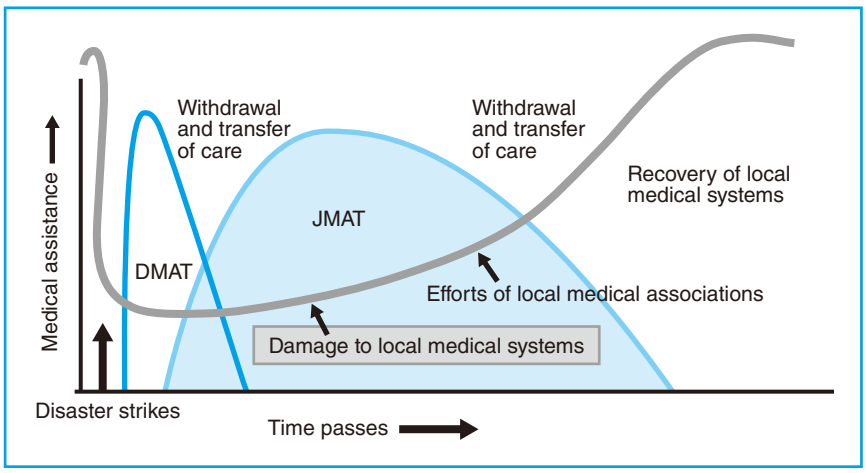

Fig. 2 Role sharing between the DMAT and JMAT programs (conceptual diagram)

from DMAT to JMAT, and then from JMAT to local medical associations and their physicians (**Fig. 2**).

Making this transition smoothly means providing consecutive medical care, which is just what the local residents want. For this to happen, it is essential to share information and awareness between DMAT and JMAT members during normal times. Taking advantage of each other's seminars and training to learn about the other program's role is also important.