

# JMAT Hyogo: Medical relief activities in Ishinomaki City

## — Review of Hyogo Prefecture's disaster medical system —

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This is a report of the medical relief activities of JMAT Hyogo in Ishinomaki City, which was affected by the Great East Japan Earthquake and Tsunami. A review of the disaster medical system in Hyogo Prefecture based on the JMAT experience is also reported.

“Safety of life and body is the top priority” is something that everyone feels keenly immediately following an enormous disaster. Immediately after the Great Hanshin-Awaji Earthquake in 1995, we were firmly resolved to make “no compromise in disaster preparedness.” However, we also realized that the general public would forget about the disaster as time went on. When the 2011 disaster occurred, it was a case of “a natural disaster striking when people have lost their memory of the previous one.” In retrospect, Japan has been repeating this sequence of psychological changes. I believe that we—including medical associations—need to prepare anew and remain well-prepared based on the premise that the general public will forget past disasters over time. JMAT Hyogo was dispatched to the affected areas also as part of the activities of the local government. Our destination was Ishinomaki City, the second-largest city in Miyagi Prefecture with a population of approximately 160,000. As a governmentally regulated medical district, the Ishinomaki city area has a population of approx-

imately 220,000, including neighboring cities and municipalities. Medical activities at the first-aid stations were carried out for about three months, from March 21 until June 19, 2011. Our activities started at the Ishinomaki Junior High School with 700 evacuees and then three more stations, followed by patient visits. JMAT Hyogo dispatched 44 teams in total to the disaster area.

Each team departed by airplane in the early morning of the first day, stayed in the disaster zone carrying out medical activities for three days, and then left on the last flight on the third day.

A total of 140 physicians were dispatched from Hyogo, with as many as six physicians required in a team. The number of JMAT team members totaled 312, including nurses, pharmacists, and coordination staff. The teams were organized with the cooperation of the secretariats of Hyogo prefectural nurses associations, pharmacists associations, and medical associations as well as municipal medical associations.

First-aid stations had not been prepared beforehand. The first JMAT Hyogo team set up a first-aid station at the junior high school in consultation with the school principal (**Fig. 1**). Every time physicians in specialist fields were dispatched, notices for evacuees were posted at the first-aid center in advance. Obstetricians and

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**Fig. 1** First-aid station of Hyogo Medical Association at a junior high school

gynecologists, ophthalmologists, and dermatologists were also dispatched.

*Tatami* mats used by the school for tea ceremony club activities were used as makeshift beds for giving intravenous drips, which were also hung from ropes. Coordination staff not only constructed a device for suspending the drips, but also secured food, water, and gasoline; negotiated with other relief teams; and made arrangements for flights and accommodation. The majority of the achievements of JMAT Hyogo were due to efforts of our coordination staff. They helped us tremendously to achieve our objectives in the disaster area.

Pharmacists were indispensable for health care at first-aid stations. They kept track of the drug inventory, which changed minute-by-minute, and promptly answered our inquiries. We were also extremely grateful for their efforts in explaining about drugs to patients.

We also proactively helped to dispatch specialist physicians. There were many evacuees who particularly needed eye care. In addition, patients who had lost prosthetic limbs in the disaster were taken to medical facilities in Hyogo Prefecture for a new prosthesis. These actions were taken because JMAT activities were aimed at helping vulnerable people in the disaster. Considering again the question “What is the mission of JMAT?” a brief answer would be to “Help the family physicians in the affected areas to recover their fundamental role and function.”

A famous diagram created by Kerr White et al. that was published in the *New England*

*Journal of Medicine* in 1961 shows the actions of people in a group of 1,000 who experienced illness or injury in an average month.

Out of the 1,000 people, 750 reported experiencing an illness, and 250 of the 750 consulted a physician providing the same services as a family physician in Japan. Of these patients, nine were admitted to hospital, five were referred to a specialist physician, and one was referred to a university hospital or other advanced hospital. In peace time, the roles of community health care providers are divided in an orderly manner according to their individual functions. However, a major disaster interrupts the functioning of this system. Core disaster hospitals are required to play enormous roles in emergency medicine after the collapse of family physician functions. The triage function at first-aid stations should be reorganized.

Considering the roles of first-aid stations, I think that there are functions common and unique to JMAT teams. The first is the triage function performed by JMAT members, who are responsible for triage as family physicians on the front lines of community health care under normal circumstances. The second is the particular consideration paid to those requiring nursing care and those vulnerable to disasters, as well as sufficient knowledge and skills related to home care. The third is the function of dispatching physicians with a wide range of specialties. All these are functions unique to medical associations. The fourth is making daily efforts to seek, from a comprehensive view of community health care, the most appropriate health care system for the community under ordinary circumstances. Japanese Nursing Associations and Japan Pharmaceutical Associations also have important roles to play. In this sense, the JMAT should play a central role in supporting recovery and restoration activities for community health care.

Hyogo Prefecture focused especially on the strong coordination efforts in disaster medicine in Ishinomaki. Hyogo also has disaster medicine coordinators, but the situation in Ishinomaki taught us to review our current way of managing our coordinators. Prior to this disaster, there were two core hospitals in Ishinomaki capable of treating acute-phase diseases and injuries, but one of them sustained catastrophic tsunami damage, completely destroying the hospital's disaster medicine function. Fortunately, the Ishinomaki

Red-cross Hospital was undamaged and was able to act as the headquarters for community health care recovery as a core disaster hospital.

In what can be called the “*Ishinomaki Method*,” medical teams coming from throughout Japan were managed as combined medical teams under a disaster medicine coordinator headquartered in the Ishinomaki Red-cross Hospital. Ishinomaki was divided into 14 areas, and medical teams were allocated to different first-aid centers in the individual areas as a continuous or temporary rescue teams.

The continuous teams stayed at their designated first-aid center and their responsibilities were taken over by the next incoming team from the same group. A position of “Area Manager” was established to act as coordinator for each area. These managers met with the disaster medicine coordinator every morning and evening to report problems encountered in their designated areas and made efforts to resolve these problems. The managers took these decisions back to their designated area and communicated them to all the team members in meetings. For example, was there a problem regarding how acute patients should be distributed among the medical facilities? Teams also helped to establish welfare-specific shelters to handle patients with severe disabilities.

In order to assess the sanitary conditions at the shelters, assessment sheets were prepared; the area managers made the evaluations, which were then submitted to the disaster medicine coordinator. Items such as water, food, heating, and toilets were evaluated using the symbols “☉, ○, △, and ×.” This was suggested by the coordinator, who thought that because there were as many as 300 shelters, this way of assessing the sanitary conditions would be the best option. If toilet conditions were assessed as bad, measures such as installing portable emergency toilets with plastic waste bags and simple hand-washing equipment were taken.

In brief, the main feature of the *Ishinomaki Method* was the centralization of management and command, which worked well enough to attain effective results. This feature was based on factors such as continuous relief activities at first-aid stations, organization of combined Ishinomaki medical rescue teams, creation of sanitation assessment sheets, and assignment of disaster medicine coordinators, who played

an important role. This method may provide a model for medical rescue activities in cases where community health care sustains unexpected catastrophic damages in a disaster. When we envision similar disasters in the future, the roles of disaster medicine coordinators will be increasingly important in the recovery stages of community health care.

Many years have passed since the Great Hanshin-Awaji Earthquake of 1995. As I mentioned earlier, the general public as well as physicians have gradually forgotten this disaster, simply regarding earthquake disasters as a problem for someone else. It may be surprising to know that the probability of the 1995 Earthquake occurring was only 0.1 to 3%. In this regard, it is important for all of us to recognize that an earthquake of similar magnitude may occur anywhere or anytime in Japan.

Has the living environment at shelters, such as bedding and food, improved? Was construction of temporary housing carried out quickly and smoothly? If the earthquake had struck during rush hour, what would have happened? The 1995 Earthquake happened at the time of day when the least damage could be expected. What would have happened if it had struck during rush hour? If it had struck during rush hour, the disaster would have been out of the control of medicine at its full capacity. Such events may happen anywhere. A major earthquake is also predicted to strike directly beneath the Tokyo Metropolitan Area in the future; if that does eventuate, it will be a living hell.

The question for Hyogo Prefecture after the 3.11 disaster is whether the lessons learned from the 1995 Earthquake in this prefecture have been communicated nationwide. Hyogo Prefecture is seriously wondering whether we will survive another calamitous disaster.

Something else that we learned from the Great East Japan Earthquake was that disaster preparedness is important in local areas, even in small towns. The Hyogo Prefectural Government states that all regions of the prefecture should develop a capacity for self-rescue that can respond to the hyper-acute phase of a disaster. The function of coordinator in leading restoration efforts for community health is also important. JMAT teams to perform emergency medical activities in this prefecture should be formed.

To achieve this, the following must be done:

**Table 1 Coordination functions required at times of disaster**

- ① Confer the authority to control community health care and public health from the sub-acute through chronic phases.
- ② Understand the status of changing community health care with an aim towards recovery, and adjust and/or supervise patient examination triage systems in accordance with the circumstances at that point in time.
- ③ Collect and evaluate information about public health at shelters and address related risks.
- ④ Supervise management, procurement of drugs and medical materials at first-aid station, and responses to vulnerable people outside of the first-aid station.
- ⑤ Control medical aid teams mobilized to the disaster area and supervise allocation of teams to first-aid stations and distribution of duties.

**Table 2 What should be done for future rescue activities in Japan?**

Even after experiencing the Great Hanshin-Awaji Earthquake and the Great East Japan Earthquake, there has been no sign of discussions regarding preparations from the standpoint of centralizing the chain of command in disasters. When an enormous disaster occurs, skills in every field must be deployed to the maximum in order to contain damage to the minimum. If we pursue efficiency and rationality in rescue activities, even with no legal underpinnings for duties or authority, the kinds of measures needed to be taken are inevitably identified. In order for the police, fire department, Japan Coast Guard and Japan Self Defense Forces, together with medical institutions, medical associations, and other private-sector organizations to be able to truly achieve government-private sector cooperation and make preparations for rescue activities with maximum efficiency and rationality, why not first of all implement possible measures in Hyogo Prefecture, and then spread these to the rest of Japan?

establish a JMAT pre-registration system, secure a certain number of JMAT members for each secondary medical zone, select a leader to control JMAT teams in the medical zone, conclude an agreement with Hyogo prefectural nurses associations and pharmacists associations for joint participation in the JMAT program, and carry out JMAT training programs.

In Hyogo Prefecture's core disaster medicine system, there are 16 core disaster hospitals in each secondary medical zone. There are also 28 Disaster Medical Assistance Teams (DMAT). The prefecture is among the first in Japan to employ disaster medicine coordinators. However, I think it is necessary to review ways of

utilizing these coordinators more effectively. Local health centers played a significant role in providing health care at first-aid stations at the time of the 1995 Earthquake. We are asking local governments to specify in their disaster related manuals the importance of the activities of JMAT teams and health centers because JMAT in particular needs to function strongly in order to unify community health care capabilities. These measures may be necessary for to achieve an advanced system expected in the future.

Controlling community health care and public health from the sub-acute through chronic phases will be added to the coordination functions required of JMAT at times of disaster. I

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think it would be ideal for JMAT to have functions ② through ⑤ shown in **Table 1**. This may seem to give JMAT enormous authority, but these are all issues in which medical associations must be involved.

**Table 2** shows what Japan needs to do at the very least. We have experienced two major disasters in the past two decades, but there has been no discussion of the unification of command and management systems at times of disaster. This is an extremely difficult problem for Hyogo Prefecture as well. Even in a major disaster, the vertically-segmented administrative system remains

unchanged, which prevents swift and smooth relief efforts. In government council or committee meetings, even if renowned physicians from national and public hospitals attend as members, they feel difficulty in directly expressing opposition to government plans.

I hope that the Japan Medical Association will attend such meetings as a representative of physicians and express its candid opinions to the government representatives from the viewpoint of the medical profession, whose mission is to protect the nation's health.

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#### Reference

1. White KL, Williams TF, Greenberg GB. The Ecology of Medical Care. *N Engl J Med.*196;26;885–893.