

## Onsite Medical Rounds and Fact-finding Activities Conducted by Nippon Medical School in Miyagi Prefecture after the Great East Japan Earthquake 2011

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### Abstract

This report describes our onsite medical rounds and fact-finding activities conducted in the acute phase and medical relief work conducted in the subacute phase in Miyagi prefecture following the Great East Japan Earthquake and subsequent tsunami that occurred off northeastern Honshu on March 11, 2011. As part of the All-Japan Hospital Association medical team deployed to the disaster area, a Nippon Medical School team conducted fact-finding and onsite medical rounds and evaluated basic life and medical needs in the affected areas of Shiogama and Tagajo. We performed triage for more than 2,000 casualties, but in our medical rounds of hospitals, clinics, and nursing homes, we found no severely injured person but did find 1 case of hyperglycemia. We conducted medical rounds at evacuation shelters in Kesennuma City during the subacute phase of the disaster, from March 17 through June 1, as part of the Tokyo Medical Association medical teams deployed. Sixty-seven staff members (17 teams), including 46 physicians, 11 nurses, 3 pharmacists, and 1 clinical psychotherapist, joined this mission. Most patients complained of a worsening of symptoms of preexisting conditions, such as hypertension, respiratory problems, and diabetes, rather than of medical problems specifically related to the tsunami. In the acute phase of the disaster, the information infrastructure was decimated and we could not obtain enough information about conditions in the affected areas, such as how many persons were severely injured, how severely lifeline services had been damaged, and what was lacking. To start obtaining this information, we conducted medical rounds. This proved to be a good decision, as we found many injured persons in evacuation shelters without medication, communication devices, or transportation. Also, basic necessities for life, such as water and food, were lacking. We were able to evaluate these basic needs and inform local disaster headquarters of them. In Kesennuma City, we found that some evacuation shelters could not contact others even after 1 week after the earthquake. We realized from our experiences that, unlike our activities following more localized earthquake disasters, the first task following such large-scale disasters is to acquire information on basic life needs, including medication needs, and the number of persons requiring assistance. We must provide medical relief according to the unique characteristics of the disaster-affected areas as well as the specific nature of the disaster, in this case, a tsunami. (J Nippon Med Sch 2011; 78: 401-404)

**Key words:** earthquake, tsunami, disaster

## Introduction

Following the Great East Japan Earthquake (magnitude 9.0) and subsequent tsunami that occurred off northeastern Honshu on March 11, 2011, our team members from Nippon Medical School (NMS) were deployed as a Tokyo Disaster Medical Assistance Team (T-DMAT) and as part of Japan DMAT (J-DMAT) to provide onsite triage, staging care unit (SCU) management, and medical support for a disaster base hospital in the affected area. This report describes our onsite medical rounds and fact-finding activities conducted in the acute phase and medical relief work conducted in the subacute phase in Miyagi prefecture, and describes the issues encountered during medical rounds and relief efforts.

### Onsite Medical Rounds and Fact-finding Activities in Shiogama and Tagajo

An NMS team conducted fact-finding and onsite medical rounds and evaluated basic life and medical needs in the affected areas of Shiogama and Tagajo as part of the All-Japan Hospital Association medical team deployed to the disaster area. The team checked the locations of evacuation shelters, primary clinics, and hospitals and went first to Tagajo-higashi Primary School to provide medical care to around 400 injured persons among the evacuees there. Their next stop was a primary clinic, which had been severely damaged by the tsunami. Some patients had been admitted, but the most pressing problem was limited food supplies. In a nursing home for the elderly, the ground floor had been severely damaged, and residents had been evacuated to the first floor. There was a shortage of anticonvulsants, but no emergency situations. Also, around 600 evacuees were staying at the Tagajo Culture Center, and we assisted medical staff from Saka General Hospital who had started providing medical care at the Center and at Tagajo General Gymnasium. The final place the team visited was Tenshin Primary School, which had around 1,000 casualties. Medical staff from Sen-en General

Hospital had started medical care, and our team supported this. In the medical rounds conducted there, we performed triage for more than 1,000 casualties, and 4 patients were evacuated for urgent hemodialysis. One patient was transferred to a disaster base hospital because of hyperglycemia. In our medical rounds of hospitals, clinics, and nursing homes, we found no severely injured persons.

### Medical Support for Kesennuma

We conducted medical rounds at evacuation shelters in Kesennuma City during the subacute phase of the disaster, from March 17 until June 1 as part of the Tokyo Medical Association medical teams deployed. Sixty-seven staff members (17 teams), including 46 physicians, 11 nurses, 3 pharmacists, and 1 clinical psychologist, joined this mission.

In Kesennuma City, with a population of 74,000, the quake registered 6 on the Japanese Seismic Intensity Scale, and as of September 26, 2011, the death toll was 1,020 with 387 missing<sup>1</sup>. The fire following the tsunami raged through central Kesennuma, Uchinowaki, and Shishiori. More than 19,000 residents fled to evacuation centers that still had no electricity, water supply, gas, or information network when we reached them on March 17. Gasoline was also in short supply, hampering relief efforts. Kesennuma City Hospital continued to receive emergency cases, but all outpatient clinics were closed.

Our medical team met at Kesennuma City Hospital with other medical teams, mainly from the Tokyo metropolitan area, to determine the city's medical needs. However, because we could not grasp the needs fully, we divided up to conduct medical rounds of the evacuees, and starting the following day our team covered Karakuwa peninsula, where there were around 1,500 evacuees at 16 locations. In the peninsula, with a population of 8,841 in 2,252 houses, the death toll was 58 with a further 54 missing as of April 5. Around 600 houses were completely destroyed. Our team was the first to enter the peninsula after the earthquake, and we provided care for an average of 50 patients per day.

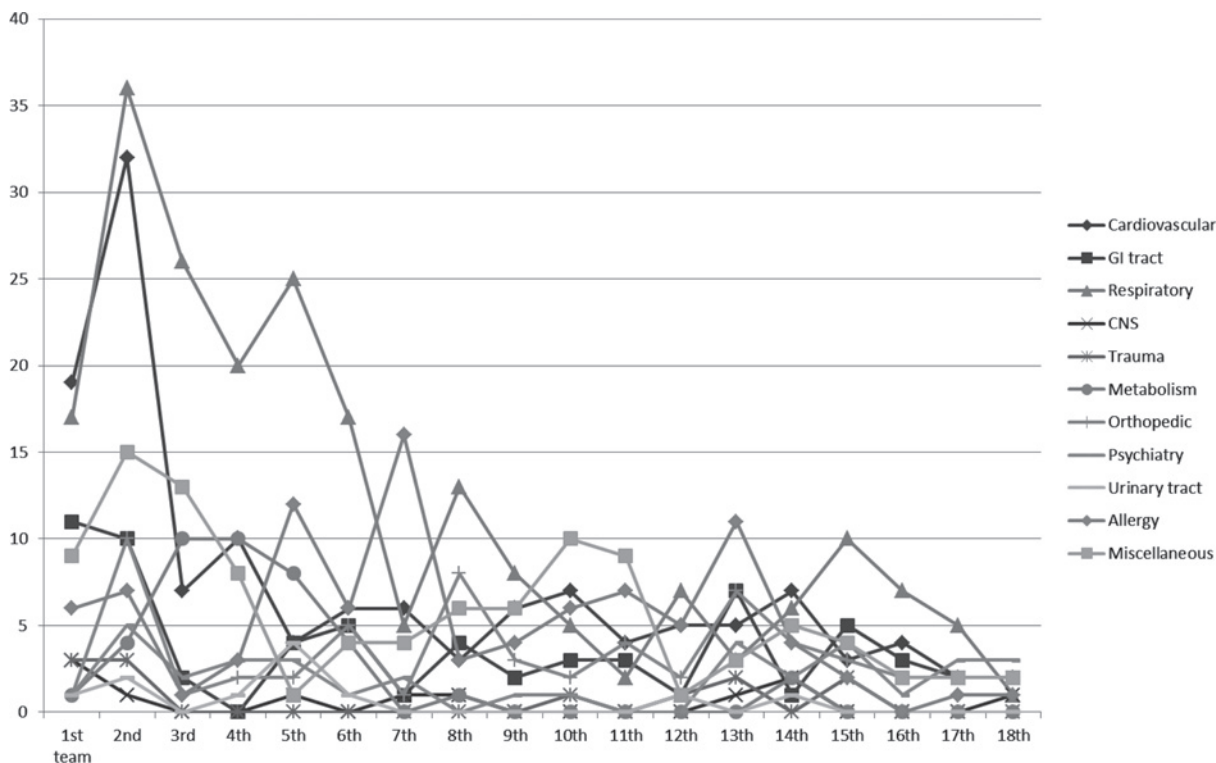


Fig. 1 Prevalence of diseases found on our 19 medical team missions in evacuation shelters in Kesennuma

Patients presented with wound infections, preexisting conditions, such as hypertension, diabetes, and cardiac disease, among other conditions. We also evaluated basic life needs, hygiene, and health conditions, especially from the viewpoint of prevention of infection. Professor Yokota of NMS led the medical relief team operations in Kesennuma. We continued providing care and fact-finding at 104 locations until March 20. Our medical relief activities then changed from medical rounds to providing care at 16 field clinics that were established, covering 1,000 evacuees at each clinic. There were eventually field clinics at 26 locations. This scheme was started at the request of the Japan Medical Association in Kesennuma City. In the Karakuwa peninsula, 3 field clinics were established in the town halls of Nakai and Karakuwa and in Koharagi Junior High School. **Figures 1 and 2** show the prevalence of diseases found on our 19 medical team missions among evacuees at shelters in Kesennuma. Most patients complained of a worsening of symptoms of preexisting conditions, such as hypertension, respiratory problems, and diabetes, rather than of medical problems specifically related to the tsunami.

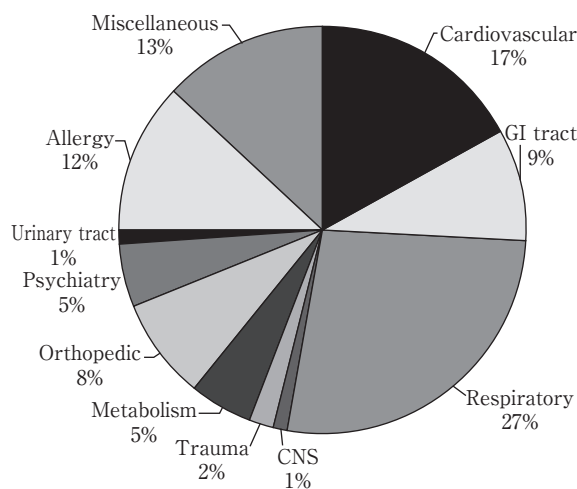


Fig. 2 Percentages of diseases seen among evacuees in shelters in Kesennuma

Another important mission we participated in was forensic investigation, and one of our personnel joined the police teams, on behalf of local doctors. According to the statement by the Police Agency on April 19, the most frequent cause of death (N = 11,208) from this disaster was drowning (N = 12,143, 92.5%), followed by trauma (N = 578, 4.4%), miscellaneous (N = 266, 2.0%), and burns (N = 148, 1.1%).

## Discussion

In the acute phase of the disaster, the information infrastructure was decimated and we could not obtain enough information about conditions in the affected areas, such as how many persons were severely injured, how severely lifelines had been damaged, and what was lacking. To start obtaining this information, we conducted medical rounds in the cities of Shiogama and Tagajo, while another of our medical teams worked as part of J-DMAT, because few casualties needed to be evacuated to the SCU in the disaster area for wide-area evacuation owing to the specific nature of the disaster, that is, a tsunami in which most people drowned. This proved to be a good decision as we found there were still many casualties in evacuation shelters without medication, communication devices, or transportation<sup>2</sup>. Also, basic necessities for life, such as water and food, were lacking. We were able to evaluate these basic needs and inform local disaster headquarters of them.

In Kesenuma City, we started to obtain information about basic life needs, the number of injured persons, and the worsening of preexisting diseases in all evacuation shelters during the first 2 days of medical relief activities. We found that some evacuation shelters could not contact others even after 1 week after the earthquake. We realized from

our experiences that, unlike our activities following more localized earthquake disasters, the first task following such large-scale disasters is to acquire information on basic life needs, including medication needs, and the number of patients requiring assistance. We must provide medical relief according to the unique characteristics of the disaster-affected areas and the specific nature of the disaster, in this case, a tsunami.

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