

Chapter 4

University-Wide Efforts for the Earthquake



Specialists throughout the university visited affected areas, not only to provide radiation medical care but also to identify the victims of the tsunami who had died, investigate the radioactive contamination in the environment, and manage the health of the surviving disaster victims. In addition, *Tsunagari-tai*, a student volunteer group, visited temporary housing in affected areas to help with the care of those affected by the disaster.

(1) As a Specialist

Helping to Identify the Deceased

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At the end of March 2011, I received an e-mail from Dr. Takashi Takada, Dean of the Faculty of Dentistry. The e-mail said that the Hiroshima Prefectural Dental Association required us to make a list of dentists who could be dispatched to affected areas, based on a request to help identify the dead by the National Police Agency. Our major tasks were to examine and report the findings of the oral cavities of dead bodies, to create dental charts, and to check these charts against the dental data made during the victims' lifetimes.

Hiroshima University does not offer a course in forensic dentistry. Accordingly, the identification of dead bodies is handled by the Hiroshima Prefectural Police Dental Association. Since I had previously participated in training programs provided by this association, I offered my assistance to Dr. Takashi Takada. A total of six dentists were concurrently dispatched from Hiroshima Prefecture, three of whom were teaching staff at Hiroshima University.

As several weeks had passed since the earthquake, we had obtained some information about on-site activities from dentists from Tohoku University and other prefectures, who had been previously dispatched. Moreover, immediately after we arrived in Miyagi, we received information on how to carry out our activities from the Miyagi Prefecture Dental Association's representatives. We were told to always do what we could do without straining ourselves, depending on the circumstances at hand.

From the second day, dentists from our group visited postmortem examination sites in Kesenuma City, Minamisanriku Town, and other areas in Miyagi Prefecture in teams of two, under the arrangement of the Miyagi Prefectural Dental Association. I made up a team with Dr. Hiroyuki Kawaguchi also of the Faculty of Dentistry, Hiroshima University.

After the remains of the deceased victims had been washed to remove the mud and dirt on the surfaces of the bodies by police officials and had been examined by physicians the bodies were transferred to the sites where the dentists would confirm their identities. Individual workspaces for identification of the bodies were located side-by-side and were not separated by walls or other partitions. The procedures for the identification varied depending on the sites. In some locations, we had to start by opening bags where the corpses were stored, while kneeling on the floor. In other sites, we were able to concentrate exclusively on creating dental charts of dead bodies, which were laid out on work tables, while receiving assistance from police officers.

I sometimes had to remove sludge and liquid from the oral cavities of dead bodies to create dental charts, while crawling on my hands and knees, or remove shattered dentures from the oral cavities in order to piece them back together. These were very tough tasks indeed. However, the most terrible thing for me personally was that while I was working behind the curtains, I could hear the bereaved relatives crying while repeatedly opening and closing body bags.

No dentist, including me, had imagined that they would have to identify so many dead victims each day,

moving our faces close to those of the bodies and hearing the bereaved relatives sobbing. Through my experience on site, I realized that we needed not only textbook knowledge but also clinical experience and a sense of responsibility to identify the bodies. Moreover, I feel that it is important for every dentist to learn at least the basic skills of forensic dentistry, including not only identification of the deceased but also abuse and medical lawsuits, and prepare accordingly on a daily basis.

Although I was required to visit the affected areas immediately, I was able to be in contact with my family and the staff of my workplace throughout the dispatch period. In addition, I had friendly conversations with team members from Hiroshima Prefecture every day when we reported to each other our individual activities after our work. These talks provided me with great support. When I initially left Hiroshima Station for the affected areas, and then again when I departed Tokyo Station in the early morning following the completion of my dispatch, the President of the Hiroshima Prefecture Dental Association and Dr. Kurihara of the Faculty of Dentistry came to the station to see me off. I still deeply appreciate their consideration. I promise not to allow these memories of the disastrous earthquake to fade in the future.



Creating dental charts (Dr. Tsuyoshi Fujita, Department of Periodontal Medicine)

When engaging in the identification of dead bodies, we wore both medical gloves and cotton work gloves. In Miyagi Prefecture, we used dental charts that adopted a “Fukushima” format. The team members from Hiroshima Prefecture identified a total of 110 dead bodies and checked 23 dental charts against the dental data of victims over five days.

(1) As a Specialist

Creating a Tsunami Damage Map Based on Aerial Photographs

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The Great East Japan Earthquake and tsunami disaster, which occurred on March 11, 2011, caused enormous damage to the Tohoku region. The devastation was spread over such a wide area that it was not only extremely difficult to grasp its geographical distribution but also a difficult challenge to gather and provide up-to-date information. Accordingly, I felt the necessity to quickly assess the distribution of damage and, as accurately as possible to provide useful data to all of the groups and institutions which would be conducting relief activities and formulating reconstruction plans. With this in mind, I set up a team for creating a map of the tsunami caused damage in the Disaster Response Headquarters of the Association of Japanese Geographers. Specifically, I made a minute and stereographic interpretation of aerial photographs, which were taken immediately after the earthquake, to create the tsunami damage map and to make it available on the web. The secretariat for the team was established at Nagoya University.

Although the Association of Japanese Geographers and other institutions were creating tsunami damage maps, the map created by our team contained different features from other maps. Firstly, several physical geographers made precise and stereographic interpretations of aerial photographs and created a map based on their discussions. Secondly, clearly detailed the flooded areas as well as the serious disaster areas (areas where many houses had been swept away by the tsunami). Third, the seamless publication and upload of the map to the web was able to be realized at an early stage.

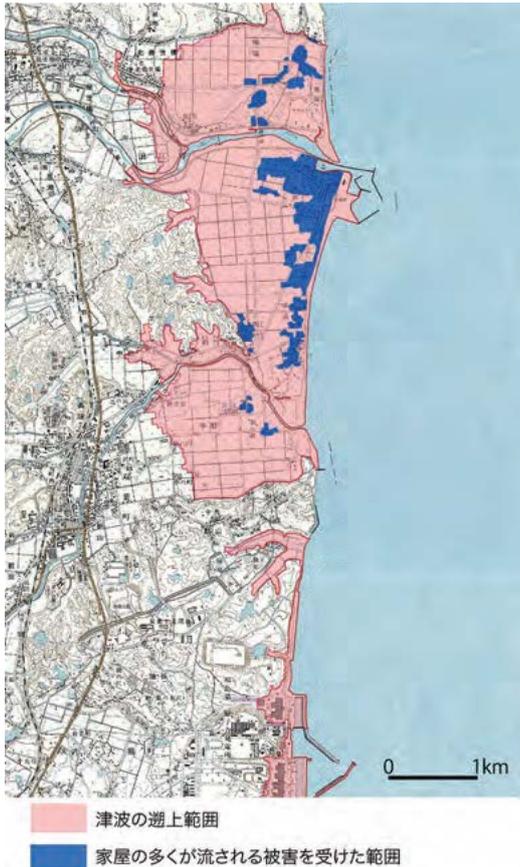
A stereographic interpretation can clarify the spatial behavior of a tsunami, which in turn leads to less reading mistakes. This enabled us to create a precise map covering a wide area in a short amount of time without having to conduct field surveys. Moreover, since the serious disaster areas were promptly identified on our map, it was used across diverse fields ranging from the government and industry to academia and the private sector.

In order to create a map covering such a wide area, we needed to analyze a great deal of materials, including aerial photographs and topographic maps, which required the collaborative work of many researchers. Consequently, we spent a lot of time and energy in communicating with each other and making arrangements for the division of roles and decision-making structure. At the same time, we discussed the mechanism of the earthquake and tsunami, which had then caused the nuclear power plant accident. We puzzled over how to strike a balance between our academic interests and responsibility versus the task of creating a tsunami disaster map.

We learned the following lessons: (1) the importance of taking aerial photographs immediately (within several days) after a disaster occurs; and (2) the importance of mapping and building a system for information exchange. To check specifically which areas were hit by a tsunami, photos should be taken while traces of the tsunami remain, preserved on the ground. In addition, it is indispensable to establish a system for photo interpretation that enables us to quickly double-check the interpretations, as well as to effectively divide the roles between data administrators, persons in charge of computerization of GIS figures, and persons in charge of the publication of these maps on the web. Moreover, due to the variety of information contained within the maps, we had to develop a system to prevent map information from

being used beyond the scope of its guaranteed accuracy, such as for legal uses.

In the near future, a massive earthquake is anticipated to occur along the Nankai Trough. To respond to such an earthquake, Hiroshima University, which is located reasonably far from the anticipated affected areas, is expected to assume an essential role. For the details of the activities of our team, please refer to the “Significance and Background of Mapping the Areas Hit by the Tsunami on March 11, 2011, Northeast Japan” (Nobuhisa Matsuda, Nobuhiko Sugito, Hideaki Goto and others; E-journal GEO, 2012).



[blue area] Inflow areas of tsunami

[pink area] Areas where many houses were swept away by the tsunami

Part of the “Iwaki-Futaba” map, a map of the area affected by the tsunami caused by the Great East Japan Earthquake on March 11, 2011, by the team at the Disaster Response Headquarters of the Association of Japanese Geographers

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(1) As a Specialist

Radioactive Contamination Survey and Information Disclosure Should Be Continued.

Kiyoshi Shizuma

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Institute of Engineering, Hiroshima University



1. Measurement of atmospheric radioactivity at the Higashi-Hiroshima Campus

When the Fukushima No. 1 Nuclear Power Plant accident occurred, the reactor buildings for Units 1, 3, and 4, as well as a Unit 2 pressure suppression room, all exploded. This caused enormous radiation damage to Fukushima Prefecture. Members of the Laboratory for Comprehensive Radiation Research, Graduate School of Engineering, began to collect atmospheric dust on March 20, 2011. After Iodine-131 was first detected on March 31, its level continued to rapidly increase until April 7. Although other types of nuclides, such as Cesium-137, Cesium-134, Cesium-136, and Tellurium-132, were detected, the amount of the detected atmospheric radiation dose was very small. This information was reported to the Crisis Management and Disaster Response Headquarters and was announced at a press conference by Hiroshima Prefecture and Hiroshima University.

Although a tiny amount of Cesium-137 and Cesium-134 were observed during April, they were not detected in and after May. Measurement data were published on the Hiroshima University website. I believe that information released by Hiroshima University helped to reduce the anxiety of local residents.

2. Measurement of radiation in environmental samples in Fukushima

On March 15, Dr. Shinzo Kimura (currently Associate Professor, Dokkyo Medical University) and NHK TV crews entered the area 1.7 km away from the Fukushima No. 1 Nuclear Power Plant to obtain a range of samples. Some of these samples were delivered to our laboratory for measurement. We conducted a gamma-ray nuclide analysis using a germanium detector, and performed autoradiography of Chinese cabbages, pine needles, and mushrooms. The measurement results were introduced on an NHK TV program, “*Network de Tsukuru Hoshano Osen Chizu* (Radioactive Contamination Map Created through a Network [of Scientists])” on May 15. I believe that information on radioactive contamination should be published as early as possible, and that continuous activities are necessary to provide information on an ongoing basis.

3. Estimation of internal radiation dose by urine bioassay

On May 5, Dr. Nanao Kamata (Professor Emeritus, Hiroshima University) and Dr. Osamu Saito (Fukushima Watari Hospital) collected urine samples (of 11 adults and five children) in Iitate Village and Kawamata Town in Fukushima Prefecture. The urine samples contained in plastic bottles were brought to our laboratory to be assayed by a gamma-ray method. Consequently, Cesium-137 and Cesium-134 were detected in the samples of all 16 subjects. In addition, Iodine-131 was detected in the urine samples of five subjects.

On May 30, urine samples were again collected from the same 16 subjects (excluding one person who refused). In the second measurement, Cesium-137 and Cesium-134 were again detected, though Iodine-131 (with a half-life of 8

days) was not.

They also conducted an oral survey of the activities of residents (about the time spent indoors and outdoors, etc.). Based on the survey results, they estimated the internal radiation dose from cesium and, in addition, thyroid radiation dose for persons in whom Iodine-131 was detected. The survey was conducted with the approval of the Ethics Committee of Hiroshima University, and the survey results were published in a scientific paper. However, there was little data concerning the measurement of thyroid radiation dose following the nuclear power plant accident. Moreover, measurements using the Whole Body Counter did not begin early enough. In these circumstances, data from the urine bioassay became invaluable as actual measured data. Furthermore, if more urine samples had been collected in March and April, thyroid radiation doses could have also been estimated in more people.

4. Measurement of radiation in breast milk

At the invitation of a citizens' group, I visited Fukuyama City in September to perform a comparative calibration of simplified dosimeters used by citizens and a scintillation survey meter that I took with me. Two nursery school principals also asked me to investigate radiation in approximately 40 kinds of foodstuffs, such as milk and vegetables, which would be used for school lunches. According to the measurement, there were no foodstuffs that contained a significant amount of radiation.

Then, hearing a participant say that a mother who had come from Fukushima to Hiroshima was worried about the influence of radiation on her breast milk, I decided to conduct an investigation into the levels of radiation in breast milk. I analyzed the breast milk of six women evacuated from Fukushima and one woman who had been living in Hiroshima. Our results showed that cesium was present in the breast milk of all the woman from Fukushima as well as the woman living in Hiroshima. However, no cesium was detected in the breast milk from each person in the second round of examinations. With this in mind, we felt that the contamination of breast milk was caused by foodstuffs.

5. Environmental radiation survey in Minamisoma City

The Fukushima Radiation Disaster Reconstruction Assistance Team was established in June under the Vice President of Hiroshima University, and engaged in an environmental radiation survey in Minamisoma City with Associate Professor Takeshi Naganuma of the Graduate School of Biosphere Science. We carried out the measurement of radiation levels in various foodstuffs, groundwater, tap water, and field soil, as well as air radiation levels in the surroundings of private homes and inside houses upon the request of residents. In addition, we continued to take samples of atmospheric dust over a period of one year from October in order to investigate how radiation was drawn up from the ground and scattered by forests. We found in our results that no radiation was drawn up from the ground. Moreover, we investigated water and bottom sediment in irrigation ditches because of residents concerned about possible contamination. The survey results showed that although the water in irrigation ditches was not contaminated, cesium was found in the bottom sediment.

Subsequently, we conducted another survey at several spots from the mouth to the upper reaches in all the major local rivers (Niida River, Ota River, Mizunashi River, Mano River, and Odaka River) flowing through the city. The survey results to this point showed that the contamination levels in the bottom sediment was low at the river's mouth and became progressively higher as we moved up river. The upper reaches of the rivers located to the northwest of the

Fukushima Nuclear Power Plant are known to be heavily contaminated. We should continue to investigate how contamination in the upper reaches spreads downstream and how decontamination work affects the downstream areas.

In November 2011 and May 2012, we held debriefing sessions about the survey in Minamisoma city, which were attended by approximately 100 residents on each occasion.



Sampling for the environmental radiation survey in Minamisoma City (March 2012)

(1) As a Specialist

Supporting Prescription Work at the Ofunato Hospital which Escaped Devastation

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Hiroshima University Hospital



I supported prescription work in a hospital dispensary at the Iwate Prefectural Ofunato Hospital. The urban areas in Ofunato City and neighboring Rikuzentakata City were devastated by the tsunami which followed the earthquake. The Iwate Prefectural Ofunato Hospital located on the mountainside was the only hospital that escaped damage. Since local residents visited the hospital in large numbers, the workload of the hospital staff far exceeded their permissible limits. As there were very few dispensing pharmacies that could handle external prescription requests in the city, all external prescriptions were being filled by the hospital dispensary.

On April 7, three days after I visited the hospital, an aftershock of seismic intensity of no lower than 6 occurred late in the night. Immediately, we made preparations for receiving sick and injured people due to the aftershock. We made temporary, simple beds by adjusting the reclining angle of sofas in waiting rooms and we prepared necessary infusion solutions and emergency medicines. Once preparations were completed we were on standby for several hours. Fortunately, no patient visited the hospital, and medical care was provided as per usual the next morning. However, since the power supply was cut off throughout Iwate Prefecture due to the aftershock, the entire hospital became a very challenging place to work until the power was restored.

Although there was not enough food, utilities such as electricity and water had been restored. I was offered a meeting room of the hospital as a napping room and was in turn given a mattress and blankets. The conditions seemed to be relatively favorable.

Meanwhile, much to my annoyance, there was a great shortage of information on how to travel to the hospital. It was approximately 80 km from the Iwate Hanamaki Airport to the Ofunato Hospital. However, I was unable to obtain accurate information about whether or not transportation systems were functioning properly, the situation of highways from the airport to the hospital, and the extent that utilities had been restored. Moreover, I had no idea who I should ask about this information. In short it was extremely difficult to get accurate information.

When supplying support services in local areas, it is vital to secure rental cars (for transportation) because they are a necessary means of transportation on site. However, it was difficult to secure rental cars, because most of them were already being used by local residents who had lost their private cars in the tsunami leaving only a small number available for rent.

In principle, disaster assistance should be offered in a manner that allows both rescue workers and those living in the affected areas to be as self-sufficient as possible. However, if potable water can be procured on site, rescue workers don't need to carry a personal supply when visiting affected areas, and which will allow for more effective, long-term support activities. On this occasion, because I didn't have information regarding available water supplies, I took potable water with me from Hiroshima which made travel difficult and cumbersome, and was a great strain.

An electronic dictionary and a tablet computer were very useful tools as information sources (drug catalogues).

If public wireless LAN or Wi-Fi are available, they would allow us to connect to the Internet and in turn be able to obtain more accurate information in a timely manner (though batteries need to be secured).



Making preparations for receiving sick and injured people (photographed by the author)

(1) As a Specialist

Supporting the Health of Disaster Victims

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I engaged in support activities in Miyagi and Fukushima Prefectures, as a medical staff member of the Primary Care for All Team (PCAT), of the Japan Primary Care Association.

From June through September, 2011, we provided 24-hour-a-day care on a two-shift system at an isolated shelter for patients with infectious diseases in the Short Stay Base (SSB) of the Ishinomaki Royal Hospital in Ishinomaki City, Miyagi Prefecture (main care provider: Mariko Mizukawa, a graduate school student at our research laboratory). We engaged in nursing for infectious diseases as well as the management of chronic diseases and rehabilitation care. In addition, we made coordinated for patients to be smoothly transfer from the shelter to temporary housing in cooperation with MSW. We also performed screening tests for depression and PTSD to provide specialized care.

From August 2011 to January 2012, the Hiroshima City Council of Social Welfare recruited volunteers to visit the temporary housing in Minamisoma City in Fukushima Prefecture and conducted various activities for disaster victims. We checked residents' health conditions and offered health consultations (approximately 90% of residents participated). In order to detect any abnormalities as early as possible, we did full body examinations, as well as vital sign checks, blood glucose level measurements, and listened to any complaints they may have had. Many residents to whom we provided treatment and guidance had chronic diseases as well as disorders caused by the earthquake. When we identified an abnormality, we made contact with local health nurses in order to connect patients to the appropriate local institutions.

While waiting for their blood-pressure to be taken, some residents talked quietly about their situation at the time of the disaster, their family members who were separated from them or lost, their anxiety about the future and the hardships that they faced when escaping the nuclear power plant accident. Their discussions had a great impact on me.

On January 7 and 8, 2012, I visited the Department of Nursing at the Motoyoshi Hospital in Kesenuma City, Miyagi Prefecture. The hospital was forced to change its operating mode to mainly one of outpatient care and visiting care services because it was no longer able to function as a conventional hospital. We interviewed the hospital staff about their issues and subsequently suggested countermeasures.

From April 1, 2012, through March 31, 2013, we dispatched a health nurse (Hazuki Kamon, a graduate from the Nursing Program) to Yamamoto Town, Watari County, Miyagi Prefecture, for an extended period (on a grant from new year card donations). We managed the health care for disaster victims residing in both temporary housing and in their own homes, using a remote biosensor monitoring system, located at the Kasumi Campus of Hiroshima University, as well as on site. In addition, Ms. Kamon visited individual homes while working as an assistant staff member of a community general support center in order to compensate for an on-site manpower shortage. She received guidance from local experienced health nurses which was an inspiration for personal growth.

Around Christmas time, students at Hiroshima University Attached Elementary School and Attached Shinonome Elementary School created approximately 1,000 Christmas cards and sent them to disaster victims. These cards were appreciated so much that they became a topic of conversation in all affected areas. Moreover, this card exchange helped to initiate an interaction between the students and the disaster victims (funding came via a grant from new year card donations).

Temporary housing is located in remote areas that have limited traffic access, where individual rooms are very small and there is little privacy. Residents have been cut off from their family members and have lost their jobs. Their normal lives have been destroyed. Under these circumstances, it is very difficult for them to act positively. Without fundamental support, they cannot resume their normal lives. Although we all knew that we needed to provide support to them, we were particularly frustrated because we also knew that we could not be involved with fully resolving all of these issues.

Since many of the medical facilities and their equipment were badly damaged, a new care service system needs to be developed. However, no matter how enthusiastic we are about the establishment of a new system of care, we will always be required to make adjustments in order to satisfy the immediate interest and needs of the people. At this point I feel like I have reached the limit of my ability to provide support, simply because I am unable to provide constant assistance from Hiroshima, which is so far from the affected areas.



Checking health conditions at an assembly room of temporary housing in Minamisoma City

(1) As a Specialist

My First Experience of Visiting Care and Rehabilitation

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(Then: Graduate Student, Department of Orthopaedic Surgery,

Graduate School of Biomedical & Health Sciences)



I participated in a medical support program for affected areas conducted at the Iwate Prefectural Takata Hospital for two weeks from October 31, 2011. The program that I joined was the Chugoku & Shikoku Block Medical Support Program for Affected Areas, where orthopedic surgeons from university hospitals in the Chugoku and Shikoku regions were dispatched to the Iwate Prefectural Takata Hospital by rotation every two weeks to provide medical support.

Takata Hospital resumed medical care at a temporary clinic from July 25, an evacuation destination, two days after the earthquake. An average of 250 patients visited the hospital each day, of whom approximately 60 came to the orthopedic surgery department. Sixty percent of the patients suffered from degenerative diseases such as gonarthrosis, spondylosis deformans, osteoporosis and lumbar canal stenosis. After the earthquake, hospital staff members were also committed to home care, including visiting temporary housing to provide rehabilitation treatment and medical care, aiming to offer community health care just as they did before the earthquake. The hospital director as well as physicians, and many other care givers were also victims of the earthquake lived in temporary housing in Sumita Town located an approximately 30-minute drive from the clinic (I also stayed at a hotel in the town).

Following the earthquake, Dr. Yoshiyuki Osawa, from the Department of Orthopedic Surgery of the Osaka Seamen's Insurance Hospital, worked full-time at the hospital. I provided support not only for the usual outpatient care but also for visiting care and rehabilitation. On a personal note, I was embarrassed by the fact it was my first experience to offer home care, such as rehabilitation visits. Although my main purpose at the hospital was to conduct support activities for medical treatment in affected areas, I was able to grow both personally and professionally due to the variety of challenges I encountered. For this I am deeply appreciative of my time in Iwate.

In the areas that had been hit by the tsunami, there was nothing but ruins and rubble. Meanwhile, on hilly areas with relatively little damage, a city hall, a post office, restaurants and convenience stores were temporarily built one by one, which offered a growing level of independence to the lives of affected residents. A restructuring plan for the hospital is currently ongoing. The site where the Takata Hospital will be rebuilt has been determined, and the design for the building has been completed. The reconstruction of the hospital will be one of the first steps towards full independence and recovery from the earthquake for Rikuzentakata City and its citizens.

Before the earthquake, approximately 70,000 pine trees had been planted as a windbreak at Matsubara Beach in Rikuzentakata. The beach, renowned for its aesthetic and magnificent view was devastated by the tsunami and only one lone pine tree was left standing. When I visited, there had already been an announcement that preserving it would be difficult and the tree would probably need to be cut down. Despite this, the dignified tree, appeared to stand as a monument of hope, praying for the reconstruction of the town, gently watching over its residents rather than a symbol of fear of the earthquake. Sadly, the pine tree, heavily damaged by seawater, was finally cut down on September 12, 2012.



Physicians and nurses with whom the author conducted support activities (author in the center)

(1) As a Specialist

What I Witnessed in Miyagi and Fukushima

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An unprecedented earthquake occurred on March 11, 2011. Since I had worked as a volunteer after the Great Hanshin-Awaji Earthquake, I engaged in support activities at an evacuation center in Miyagino Ward, Sendai City, Miyagi Prefecture, for a week in the middle of April. This was in response to a request from the Rehabilitation Support Program of the Disaster Response Headquarters, Japanese Physical Therapy Association. Since the affected areas were in utter confusion at that time, it was through trial and error that I determined what I should do and how I could help. For example I helped a high school girl, who had fallen down while riding her bicycle over an uneven road, that had been raised approximately 20 cm by the earthquake.

At the end of August, there was a shortage of manpower at the Rehabilitation Department of the Minamisoma City General Hospital in Minamisoma City, which contained an emergency evacuation zone for the nuclear power plant accident. Of fifteen paramedical staff members, only three physical therapists remained on site after the earthquake. When I visited the hospital in September, all of them were exhausted, both physically and emotionally, having been working non-stop to the limits of their capacity. Accordingly, I formulated a plan, in which other physical therapists from around Japan would be dispatched to the hospital one by one, on a one-week rotation system from October. I was able to assemble volunteer physical therapists which we were able to dispatch to the hospital over a seven month period ending in April, 2012. The Japan Primary Care Association provided a transportation allowance to dispatch volunteers, and we ultimately succeeded in assembling forty physical therapists.

As cardinal rules for our volunteers, we set goals of responding to patients and hospital staff with a smile and of doing our best to lighten the workload of the full-time physical therapists. We also did our utmost to not to place any further strain on them. Whenever possible, the volunteers also joined in providing medical care at the hospital from October in the middle of autumn. As the situation was an extreme state of emergency, patients needed to be dealt with on the basis of triage protocol, all volunteers were committed to providing as high-quality medical care as they possibly could. Thanks to the careful consideration of hospital administrators in coordinating volunteer accommodation, food, and many other things, everyone was able to work effectively towards the accomplishment of our initial goals. I believe that the sights of the affected areas around the hospital are etched into the memory of all of the volunteers.

We were required to play different roles depending on the stage of clean-up and reconstruction following the earthquake. In the early stages, we needed to focus on preventing any decrease in the physical strength of disaster victims. However, due to a lack of planning and confusion surrounding the earthquake's aftermath, this was not so easily achieved.

Although our support activities were concluded in April 2012, the Phoenix Leader Education Program (Hiroshima Initiative) for Renaissance from Radiation Disaster was launched as a "Leading Program" in the Graduate Schools of Education at Hiroshima University. My hopes are that graduate students in the Program of Physical Therapy

at Hiroshima University, who participated in the volunteer activities, will enter the program. Within this program, I would like to stay involved in the reconstruction efforts of the affected areas by continuing to conduct fieldwork in Fukushima Prefecture.



A large ship stranded next to Karakuwa Station on the Ofunato Line in the suburbs of Kesenuma City (photographed in March 2012)

(1) As a Specialist

Providing Medical Care to Patients with Cerebrovascular and Other Disorders

Tomoyuki Kono

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(Then: Physician, Department of Clinical Neuroscience and Therapeutics,

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I engaged in medical assistance for affected areas at the Iwaki Kyoritsu Hospital in Iwaki City, Fukushima Prefecture from March 19 through 30, 2012.

With a population of approximately 340,000, Iwaki City is the central city in the Hamadori area, Fukushima Prefecture. When the Great East Japan Earthquake occurred on March 11, 2011, the area suffered a lower six category earthquake on the Japanese scale. This resulted in approximately 40,000 houses being either completely destroyed or seriously damaged. Currently, the city serves as a base for the activities of workers working in the Fukushima No. 1 Nuclear Power Plant. The central part of the city has almost fully recovered from the disaster, and its population has in fact grown since the earthquake and tsunami.

We provided medical assistance from September, 2011 through to March, 2012. The Association of Japanese Medical Colleges played a central role in dividing universities across the country into seven blocks and dispatching a total of 274 physicians to hospitals in cities across the Tohoku region. With 25 departments and 828 beds, the Iwaki Kyoritsu Hospital, where I was dispatched, was a central hospital in the Hamadori area and received a total of 76 physicians in three departments (Departments of Anesthesiology, Emergency, and Neurology).

I was involved in medical services in various hospital wards. Since the hospital originally had not employed full-time neurologists (it had only provided outpatient care by a part-time physician once a week), physicians at the Departments of Brain Surgery and General Medicine shared the care of patients with emergent neurological disorders. During my dispatch, I was the primary physician for nine patients with cerebrovascular disorders, one patient with meningitis, and two patients with epilepsy. The majority of patients at our hospital suffered from cerebrovascular disorders, as was the case with other hospitals in the city. Fortunately, the Iwaki Kyoritsu Hospital had a sub-acute rehabilitation ward with 44 beds, where I was able to provide medical care without problem. Dr. Minagawa of the Department of Rehabilitation cooperated with me in providing care. However, physicians at the Department of General Medicine, who did not specialize in neurology, shouldered a heavy burden because they were forced to take care of patients outside their field of specialization. Due to this I became acutely aware of the need for full-time neurologists.

Since I was free on Saturdays, Sundays, and a public holiday during my dispatch, I travelled to the Pacific coast, Lake Inawashiro, and Mt. Bandai to observe the local situation. Interestingly, the central area of Iwaki City, located less than 10 km away from the Pacific coast, was not affected by the tsunami. However, when I visited the area surrounding Onahama Port, it resembled the devastating scenes that I had seen so often on TV. Although no local residents were to be found, there were a few people with cameras who seemed to be from other prefectures. The area was filled with a strange silence. As I headed north along Route 6 from Onahama, I found the road had sunk in many places.

Around J-Village, which was a base for operations at the Fukushima No. 1 Nuclear Power Plant, there were many police vehicles. Upon seeing this I realized that the area was still in a state of emergency.

Our medical assistance for the affected areas ended with my dispatch. I would like to extend my deepest appreciation to Dr. Minagawa and many other staff at the Iwaki Kyoritsu Hospital for their generous support.



Review session for rehabilitation cases at the sub-acute rehabilitation ward

(2) As a Student Volunteer

Happy to Hear the Words, “Come Again”

Sara Enomoto

4th Year, Faculty of Integrated Arts and Sciences

(Captain, First Dispatch Team of the *Tsunagari-Tai*)



From September 14 through 20, 2011, the first dispatch team of the *Tsunagari-tai*, held a handcrafting workshop at the Nipperia temporary housing site in Sendai City, Miyagi Prefecture. We had heard in the press that the elderly in affected areas tended to stay at home. We held this event to encourage people to take up a hobby again, and together we made small handicrafts and folded origami. We also made postcards and candles in a joint event with other groups from Hiroshima University. During the intervals between our activities, we distributed sweets from Saijo, Hiroshima, and Hiroshima University, which were supporting our activities. On the final day, we cooked *okonomiyaki* (Japanese-style pancakes) to serve to local residents. In our free time, we joined volunteer activities such as debris removal, which were organized by the Volunteer Center.

Our biggest challenge was formulating plans from scratch when we had no acquaintances on site and had no previous experience carrying out volunteer activities. We struggled to coordinate and organize our activities, including deciding what to do, examining local needs, building connections locally, procuring goods and funds, and advertising for volunteer members. We felt our way blindly through the entire process, with many of our plans needing to be started over from the beginning. Although it was challenging, we did our best for six months out of sheer will to do something beneficial for the disaster victims.

Looking back on our activities, including the preparation period, I can't help but think that we should have done more to collaborate with local residents. Since there were limitations on what we could do, enthusiasm alone was not sufficient to accomplish our goals. It was difficult to understand local needs and our group faced the difficult task of understanding an overall sense of purpose for our activities.

We were insufficiently prepared for our activities due to a lack of knowledge and experience. If we had divided our roles more clearly, made more detailed preparations, and rehearsed our activities in advance, perhaps we could have been more effective. Meanwhile, I learned that as a group we could work more effectively and accomplish better results by sharing a clear common goal.

The local residents who participated in our activities treated us in a very and friendly manner despite of our poor performance. In fact, we were often heartened by local residents even though it was our goal to raise their spirits!

I was very happy to hear the residents say, “I really enjoyed your events. Please come again.” By making direct contact with disaster victims and seeing affected areas with my own eyes, things became more familiar to me. I became determined to stay involved in the reconstruction efforts, even though I live in Hiroshima far away from the affected areas. I believe that this was the most significant effect the experience had on me.



Although I was worried about how many people would participate in our first-ever event, many people joined

(2) As a Student Volunteer

Listening to Requests of Residents through Home Visits at Temporary Housing

Akari Ichigi

3rd Grade, Faculty of Economics

(Captain, Second Dispatch Team of the *Tsunagari-Tai*)



Serving as Captain of the second dispatch team of the *Tsunagari-tai*, I visited Ishinomaki City, Iwanuma City, Sendai City and Watari Town, Miyagi Prefecture. We held gatherings in assembly rooms at temporary housing sites, where we set up four activity booths (for free space, creation of postcards, *origami*, and handicrafts). We invited local residents to join us.

We had distributed questionnaires to individual households in advance in order to ask residents what type of support they wanted from us. We then visited the households to collect the questionnaires. We received a range of requests ranging from cleaning ventilation fans, to singing or talking.

As three months had passed since the first team had been dispatched, and nine months since the earthquake, we expected that the needs in the affected areas might have changed. Therefore, it was difficult to be certain what we should or could do. We tried to our best assess the needs of the local residents by making contact with students from Tohoku University. We also referred to the data from the Great Hanshin-Awaji Earthquake. Furthermore, because our team was large, 23 volunteers, and we conducted our support activities across a wide range of areas, it took a while to secure all of our accommodation.

While conducting activities, I realized that the system and atmosphere of temporary housing, which had steadily increased in number since the earthquake, varied from place to place. In some cases, we could not carry out our activities as intended. This forced us to react depending on the circumstances we faced.

This time we began to visit individual households. This was proved to be very successful because we were able to provide support to those residents who, for various reasons were unable to physically come to our activities. Conversely, many residents did not return our questionnaire because they seemingly felt embarrassed to ask for assistance. In the future we need to do a better job of considering the feelings of all residents, and in turn improve the method for conducting our questionnaire survey.

We held our gatherings, aiming to connect Hiroshima and Tohoku and to help create relationships between the residents living in the temporary housing. Positively, following our events we periodically saw residents, who had become acquainted with each other at our gatherings, returning home together. Moreover, in the temporary housing that the first dispatch team had visited, residents were continuing to make origami cranes. Something they had enjoyed with the previous group of Hiroshima University volunteers. I realized that we had succeeded in helping the elderly people, with little to do during the day, to find an activity to do while living in temporary housing. Many residents even remembered the names of the volunteers who had visited there on the previous occasion, and said to us, “Thank you for visiting us again.” I realized the importance of continuing to visit the same temporary housing.

Since it is expected that the number of volunteers will decrease over time and due to this the disaster victim’s loneliness is expected to increase, it is important to continue conducting support activities. However, it is difficult to

provide support to affected areas and to understand local needs while living in Hiroshima. Accordingly, I believe that we should further develop our activities by coordinating with university students living in the Tohoku region.

Moreover, it is important not only to continue to dispatch support teams, but also to disseminate information in Hiroshima about what we learned on site and the details of the current situation in those disaster-affected areas.

I would like to continue to deliver a message from the affected areas saying, “Never forget us.”



Enjoying eating together while having a chat

(2) As a Student Volunteer

Interacting with Disaster Victims on a One-to-One Basis

Haruka Onimura

2nd Grade, Faculty of Education

(Captain, Third Dispatch Team of the *Tsunagari-Tai*)



I engaged in support activities from February 15 through 24, 2012, as Captain of the third dispatch team of the *Tsunagari-tai*. The team provided support in the Nipperia temporary housing in Wakabayashi Ward, the *Kyukan* (old building) temporary housing and the Public Zone 2 temporary housing in Watari Town, and the Mitazono 2nd and 3rd temporary housing in Natori Town, all of which were located in Sendai City, Miyagi Prefecture.

Our major activities included: (1) providing educational support to children in temporary housing and the neighboring affected areas; (2) holding gatherings (for handmade items, chatting, potluck lunch parties, etc.) in temporary housing; (3) holding gatherings in cooperation with students, voluntary organizations, and social welfare councils in the Tohoku region and visiting individual households; and (4) holding a symposium to support reconstruction assistance activities by students in the Tohoku region. Through these activities, our goal was to show we cared for all disaster victims and to provide them with emotional and mental support.

At the gatherings, volunteer students and disaster victims interacted with each other on a one-to-one basis through activities such as making handmade items, and carrying out lunch parties. They shared special moments, sometimes talking through tears and sometimes laughter. We shared in the emotions of the people in affected areas.

In home visits, we met people who did not want to leave their homes, or were physically unable to do so and wanted support from us. By establishing close relations with these individuals we did our best to support their personal needs. Moreover, we tried sharing detailed information in cooperation with social welfare councils.

Regarding educational support and while always taking safety into account, we made a concerted effort to meet the needs of the local children, who wanted to do nothing but play, partly to be typical kids and partly to release their stress.

In student symposiums, we spent our time holding valuable discussions with other students, focusing on Hiroshima and Tohoku and the status of students. Specifically, we became acquainted with students from Watari Senior High School during this dispatch. We visited their high school and carried out activities together, thereby enhancing our relations. I believe that we took a big first step in building on our relationships with high school students that can be developed in future dispatches.

In gatherings, many volunteer members felt confused and a little upset because they did not know how they should respond to disaster victims when they talked about the tsunami in the middle of a conversation. Although we gave special consideration to safety when we played with children as part of educational support, it was a challenge to manage all the risks.

Throughout the dispatch period there were a number of issues and points which I reflected upon. I learned the importance of managing risk, not only of people in affected areas but also of those involved from other areas around Japan, including the volunteers from Hiroshima. I intend to use this as a lesson for personal growth. Also, although it had

only been two months since the second dispatch team visited the affected areas, the situation and needs of the areas had undergone great changes. I have kept it in mind that I will continue to take action, and continue to gather detailed information on the local needs as volunteer dispatches continue to take place in the future.



Warmly interacting with a wide range of generations while carrying out volunteer activities

(2) As a Student Volunteer

There Are as Many Needs as the Number of People

Tsumugi Tomiie

3rd Grade, Faculty of Economics (Captain, Fourth Dispatch Team of the *Tsunagari-Tai*)



From March 10 through 18, 2012, the fourth dispatch team of the *Tsunagari-tai* conducted support activities based in Ishinomaki City, Wakabayashi Ward in Sendai City, Iwanuma City, and Natori City in Miyagi Prefecture. We mainly engaged in four activities: home visits, gatherings, assistance for children, and holding workshops. We aimed to establish and strengthen networks with the affected areas by conducting our activities together with local students. We began our preparations thanks to the third dispatch team. In addition, since we carried out support activities soon after the third dispatch teams visited affected areas we were able to pick up from where they left off. And thankfully the local students responded positively and carried on by participating in our activities as well. This was very helpful for us.

On March 10, 2012, we visited Ishinomaki City, in cooperation with the Ishinomaki Tourist Association. On March 11, we participated in a Gathering for Residents and Volunteers held at Tohoku University. On March 12, we held a gathering at the Nipperia temporary housing complex in Wakabayashi Ward, Sendai City. On March 13 and 14, we conducted activities, such as home visits, holding a gathering, and offering assistance for children, at the Iwanuma temporary housing complex. On March 15, we held the *Tsunagari* (connection) Talk session at the Sendai City Civic Activity Support Center to interact with local students. On March 16 and 17, we engaged in support activities, such as home visits, holding a gathering, and assistance for children, at the Mitazono 2nd temporary housing complex in Natori City. On March 18, we provided support to children at the Simomasuda Community Center in Natori City.

While conducting support activities, we were confronted with questions like: What is support? What are volunteer activities? What is needed in affected areas? From the moment we began the preparations for our activities, we were worried about whether they would be helpful or appreciated when we finally met the disaster victims face to face.

After finishing our daily activities on site, we held meetings and made preparations for the next day's activities. One concern was that during these end-of-day wrap up sessions some of our members pushed themselves even further due to anxiety and concerns about upcoming activities. Consequently, they sometimes appeared worn out when conducting support activities on the following day. This made me fully aware that volunteers needed to be vigorous and healthy, and take good care of themselves.

The temporary housing complexes that we visited during this dispatch each had their own atmosphere and regional characteristics depending on the location. Moreover, individual disaster victims, both men and women, living in the temporary housing were a range of ages and had a range of outlooks. When trying to address their needs under these circumstances, we tended to turn our attention to the needs of the group as a whole or the overall needs of the Tohoku region. However, I realized that there were as many needs as there were people, and what was truly needed by each of these individuals were the true needs of Tohoku.

Over three years have now passed since the earthquake and what we need to do now is to share the lessons we learned and the experiences we saw and felt in the affected areas to other people so that the earthquake is not forgotten. Although there are many issues that confront us when carrying out volunteer activities, all volunteers need face the

challenges and to continue considering what can be done to improve the situation. I believe that the most important thing is to have a positive attitude focused on caring for those in front of us who are in need of support. I would like to continue reflecting not only on my role as a volunteer but also who I am as a person in my everyday life.



Residents chatting with each other, while making local sweets

(A gathering in the Nipperia temporary housing in Wakabayashi Ward, Sendai City)

(2) As a Student Volunteer

Efforts for Reconstruction Leading to Regional Development

Yoshiaki Teramoto

2nd Grade, Faculty of Integrated Arts and Sciences

(Captain, Fifth Dispatch Team of the *Tsunagari-Tai*)



The fifth dispatch team of the *Tsunagari-tai* engaged mainly in six activities in Wakabayashi Ward in Sendai City, Ishinomaki City, Iwanuma City, Watari Town in Watari County, and Yamamoto Town in Miyagi Prefecture from August 20th through 31st, 2012.

First, we held gatherings at temporary housing, aiming to promote interaction between residents. In gatherings held in assembly rooms, we enjoyed making handicrafts, paper cuttings, and wooden items with residents and, at the same time, carefully listened to whatever they wanted to talk about.

Second, we visited individual households. Responding to requests from residents in temporary housing, we visited individual households to clean their ventilation fans and listen attentively to what they had to say. Through home visits, our goal was to meet individual needs, which could not be identified during large events such as gatherings.

Third, we conducted volunteer activities at strawberry farms. In Yamamoto Town, many strawberry farms were destroyed by the earthquake. We provided assistance to these farms, which were managed by general farmers and corporate bodies that were aiming to rebuild them.

Fourth, we participated in volunteer activities organized by the Volunteer Center in Sendai City. For example, we sifted through a field in order to take away the rubble that became buried there following the tsunami.

Fifth, we provided support to children living in temporary housing. We not only assisted them with their studies but also played outdoors as much as they wanted as part of their daily recreation activities.

Sixth, we held *Tsunagari* (connection) Talk sessions, where we discussed how reconstruction support should be provided with students from affected areas. Divided into groups, we talked about how best to provide earthquake reconstruction support through joint efforts between students from affected areas and those from Hiroshima. At the end of the discussions we shared our opinions amongst the entire group of participating students.

During all of these six activities, we cooperated with university and high school students from the affected areas. In particular, many high school students participated in volunteer activities at the strawberry farms. In fact I have subsequently heard that they continued to engage in the voluntary activities after we left.

On a separate note, I did my best to ensure that all volunteer members stayed healthy enough to provide support throughout our dispatch period. However, some members did become ill due to the fierce summer heat and our tight schedule. Accordingly, we adjusted our activities which included concluding meetings earlier and changing our schedule to include rest time. I was also emotionally exhausted from our activities and intense schedule. In future dispatches, groups need to pay more attention to fostering an environment where volunteer members can be involved in support activities while maintaining as healthy a physical condition as possible.

When visiting affected areas, I realized that reconstruction efforts were in fact leading to regional development. In the temporary housing complexes that we visited, residents declined support that may have limited their independence.

In affected areas, people are working long days to speed the reconstruct efforts. Some farmers strove to restore their tsunami-damaged strawberry farms because strawberries are the symbol of Yamamoto Town. In addition, we met high school students who undertook volunteer activities, with their student council playing a leading role, aimed at the reconstruction of affected areas. I hope that we will be able to continue providing emotional support to people in affected areas as well as supporting and encouraging the reconstruction efforts.



Volunteer members and a representative of a farm working together at the Yamamoto Strawberry Farm in Yamamoto Town