

Chapter 1

Reviewing Two Years of Radiation Emergency Medical Assistance



On March 11, 2011, the Great East Japan Earthquake struck the Tohoku and Kanto regions. The subsequent accident at TEPCO Fukushima No. 1 Nuclear Power Plant developed into a major disaster that “will most likely be recorded in the textbooks of a future world history book” (National Diet of Japan Fukushima Nuclear Accident Independent Investigation Commission Report). This chapter looks back on how Hiroshima University judged the situation and acted in response to it.

Determination to Make All-Out Efforts to Help Fukushima Recover From the Nuclear Accident as Researchers Based in Hiroshima, the World's First City to Suffer an Atomic Bomb Attack

Kenji Kamiya

Director of Radiation Emergency Medicine Promotion Center

Director of the Research Institute for Radiation Biology and Medicine



In 2004, Hiroshima University was designated as a local tertiary radiation emergency medical institution. Since then, based on the newly founded Radiation Emergency Medicine Promotion Center, the university has implemented various projects designed to develop a mechanism for providing radiation emergency medical care.

In the afternoon of March 11, 2011, the day on which the Great East Japan Earthquake hit, we were conducting a decontamination drill as part of our radiation emergency medical care training at the National Hospital Organization Kure Medical Center in Kure, south-western Hiroshima Prefecture. Hearing that the dispatch of Disaster Medical Assistance Teams (DMAT) had been ordered in response to the massive earthquake, we rushed back to Hiroshima. That night, the Prime Minister of Japan issued a declaration of “a nuclear emergency situation”. However, despite the declaration, considerable time passed without further government explanation concerning the situation of the reactors at Fukushima No. 1 Nuclear Power Plant nor the extent of environmental contamination due to radiation.

Despite no new information from the national government well into the morning of March 12, we took proactive measures and established a Hiroshima University Radiation Emergency Medicine Committee under the guidance of university President, Toshimasa Asahara. With this initial step taken, we had thereby begun substantive preparations for an accident that may involve radiation exposure. Furthermore, we called in the Director of Hiroshima University Hospital, Mitsuo Ochi, and Professor Koichi Tanigawa, Director of the Advanced Emergency and Critical Care Center, to add to our coordination team, and we dispatched the first-response group of the Radiation Emergency Medical Assistance Team (REMAT) to Fukushima.

As chairman of the Committee, I was asked to assume command of activities to be initiated or coordinated here in Hiroshima. Seven medical experts were appointed, including Professor Koichi Tanigawa and Professor Yoshio Hosoi, as members of the REMAT first-response group. I still vividly remember the indescribable sense of anxiety that I felt on that afternoon of March 12, when I saw off the National Institute of Radiological Sciences (NIRS) REMAT members from the Shinkansen train platform.

The scenes of the tsunami and the nuclear accident that appeared ceaselessly on our TV screens were utterly unrealistic and otherworldly. Something that I found particularly shocking was the images of hydrogen-air chemical explosions that were occurring at the reactor buildings.

Since the dispatch of that very first group, we have sent 37 subsequent groups, comprised of 1,244 total members (as of March 31, 2012), to Fukushima and conducted a range of activities to ensure safety and security for local residents in cooperation with the Fukushima prefectural government, the national government, NIRS, and Fukushima Medical University. Specifically, we helped rebuild the crippled system of radiation emergency medicine, provided support to the emergency rooms that were set up in J-Village, conducted radiation contamination tests on the premises of Fukushima No. 1 Power Plant, helped evacuated residents on various levels including health management, and to temporarily enter the restricted areas, and assisted with internal exposure testing at Fukushima Medical University.

We also asked Mitsuo Ochi (Director of Hiroshima University Hospital), and relevant professors from the Research Institute for Radiation Biology and Medicine (RIRBM), Hiroshima University Hospital, and Hiroshima

University Faculty of Medicine and Graduate School of Biomedical and Health Sciences, as well as Ryoichi Nishida (Executive Manager of the Management Support Office), Teruko Sainohara (Executive Manager of Nursing), and Toshio Kushima (Executive Manager of Medical Treatment Support) to join the Radiation Emergency Medicine Committee. Their participation in the committee made it possible for the Kasumi Campus to provide well-coordinated campus-wide support for our radiation emergency medical assistance activities. I would also like to thank President Asahara of Hiroshima University and Director Ochi of Hiroshima University Hospital who demonstrated excellent leadership in building this support mechanism.

Actions taken by the Committee included preparation and support for the radiation emergency medical teams to be dispatched; development of a system to admit patients to the university hospital as well as to the other hospitals that were parties to the cooperative agreement on radiation emergency medicine services; setting up decontamination tents ready to handle large number of individuals suffering from exposure; building a website; and carrying out contamination tests. Every day, we were extremely busy answering a flood of inquiries from range of affected parties including residents, the mass media, and administrative agencies. Executive Manager Ryoichi Nishida, Mr. Shigeo Hayashi, and Mr. Hisaya Azuma helped us greatly with all day-to-day office responsibilities.

In the process of engaging in these activities, I was appointed by the governor of Fukushima Prefecture to the post of Prefectural Radiation Health Risk Management Advisor. In that capacity, I have given a number of lectures both inside and outside of Fukushima Prefecture concerning radiation risks to human health and radiation protection. In so doing, I have been striving to disseminate accurate knowledge about health management and radiation, thereby easing resident's excessive worries about health hazards and preventing damage caused by the negative reputation of their communities associated with the nuclear accident and its aftermath. The total number of those who have attended my lectures has reached 20,375 (as of July 31, 2012). Also, as a radiology expert, I was appointed vice president of Fukushima Medical University, in which capacity I participated in the survey on health management that Fukushima Medical University conducted to protect the health of the 2.05 million citizens of Fukushima Prefecture. At the same time, I gave specialist advice to the national government concerning radiation risks and radiation protection.

As a researcher based in Hiroshima, a city that survived the atomic bomb attack, I am determined to continue our all-out efforts to facilitate the recovery of Fukushima in the years to come.



(left) President Asahara visiting the Offsite Center and exchanging opinions with national government officials

(right) Briefing session for residents concerning radiation risks to human health and radiation protection

Fulfilling Responsibilities as a Tertiary Radiation Emergency Medical Institution

Mitsuo Ochi

Special Assistant to the President of Hiroshima University

Former Director of Hiroshima University Hospital



When the earthquake hit the Tohoku region on the afternoon of March 11, 2011, I was on a plane from Hiroshima to Haneda, Tokyo, to attend the preliminary discussions for a meeting. On March 31 of that year, I was to complete my two-term, four years of service as hospital director. What happened just before the end of my tenure turned out to be one of the most significant events of my life so far. All means of public transportation from Haneda Airport were suspended. I had no choice but to wait eight hours before I could get into a taxi and, at 2:00 a.m., finally reach the hotel where I had reserved a room.

The next day, March 12, I managed to get through to Kenji Kamiya, Director of the Research Institute for Radiation Biology and Medicine (RIRBM). Responding to the declaration of a nuclear emergency situation issued by the national government, we immediately set up the Hiroshima University Radiation Emergency Medicine Committee. As the only tertiary radiation emergency medical institution in the Western Japan Block, Hiroshima University is required to play a central role in cooperation with the RIRBM, the university hospital, and other relevant institutions.

In the event of radiation emergencies, we must dispatch a medical assistance team and other experts specializing in radiation emergencies, conduct contamination testing on residents and retain the relevant data, and provide residents, schools, and administrative offices with information concerning radiation effects. We actively carried out these tasks under the leadership of Kenji Kamiya, Director of RIRBM, and Professor Koichi Tanigawa, Director of the Advanced Emergency and Critical Care Center. I have also been constantly encouraged and very proud to witness the Radiation Emergency Medical Assistance Team performing a wonderful job in Fukushima.

Because I was the director of Hiroshima University Hospital at that time and was also about to assume an executive post (in charge of medical affairs) at the university from April, my main task was to prepare the hospital for admitting Fukushima patients who may be sent there and who may need emergency treatment after being exposed to radiation. If the number of patients were relatively small, we planned to carry out decontamination procedures in an advanced treatment room on the first floor of the in-patient ward. For a larger number of patients, we planned to perform decontamination procedures in the parking lot of the Resident House block. We also set up four decontamination tents (some objections were raised regarding this action). We then coordinated how to assign patients to several cooperating hospitals in the prefecture, and the respective transportation routes. As for medical equipment and pharmaceuticals, we prepared decontamination devices, whole body counters (WBC) ready and replenished those pharmaceuticals that might possibly become necessary given the radiation disaster circumstances.

We also decided to immediately send half of our stockpiled emergency food supply to the disaster-hit areas, because these areas were believed to be suffering a shortage of drugs, water, and food. Yet, at that moment, we had no available means of emergency transportation. After consulting with Ryoichi Nishida, former Executive Manager of the Managing Support Office of Hiroshima University Hospital, and obtaining approval from President Asahara, we decided

to use the university's own van for that purpose. Seeing our van fully loaded with emergency food supplies screeching off, I prayed with all my heart that the catastrophe would come to an end as soon as possible.

On March 30, I headed for Fukushima myself to meet with Yuhei Sato, Governor of Fukushima Prefecture, and Shinichi Kikuchi, Chairman of the Board and President of Fukushima Medical University to discuss with them how Hiroshima University could support Fukushima in the years to come. The earthquake's "claw marks" could be seen everywhere along the way to Fukushima. I saw long lines of cars outside gas stations waiting for fuel to be delivered.

Despite all this, there were some positive moments as well: Our van, loaded with food supplies, was doing a great job in Fukushima; Dr. Kikuchi a fellow orthopedist, with whom I had enjoyed many years of friendship, gave me a hearty welcome; Director Kamiya was officially appointed to the post of Fukushima Prefectural Radiation Health Risk Management Advisor; and I promised Governor Sato, chairman of the prefectural assembly, and the many others I met, that Hiroshima University Hospital would continue its commitment and support in Fukushima for as long as necessary.

In conclusion I would like to note that the Radiation Emergency Medical Assistance Team has dispatched over 1,300 professionals to Fukushima, including doctors, nurses, radiological technologists, and extensive support staff. I would like to express my deep respect and appreciation to all Hiroshima University staff members for their contribution, and pray from the bottom of my heart for the early recovery and reconstruction of Fukushima from the recent catastrophic event.



Firmly shaking hands with Governor of Fukushima Yuhei Sato (center)

The Importance of Accurate Knowledge Is Brought Home to Us

Kazuaki Chayama

Executive and Vice President of Hiroshima University

Director of Hiroshima University Hospital



On March 11, 2011, at 14:46, a massive earthquake, with its epicenter off Tohoku's Sanriku coast, struck with a seismic intensity of 7. This major earthquake, combined with the ensuing tsunami, devastated areas all over eastern Japan. I would like to first express my heartfelt prayers for those who lost their lives and sincere condolences to their families.

I had planned to meet then Director of Hiroshima City Hospital, Dr. Osamu Oba, at Hiroshima City Hospital at 3:00 p.m. that day, however the meeting was postponed when I saw the unbelievable scenes of the tsunami unfolding on the TV screen.

That was followed by news of a nuclear power plant accident. Not knowing how much of what was being reported was actually true, Prof. Ochi, then Director of Hiroshima University Hospital, and I spent a long and uneasy time in a hospital meeting room, which would later come to be used as the radiation emergency headquarters.

From Hiroshima University, which is the tertiary radiation emergency medical institution in the Western Japan Block, many doctors, nurses, radiological technologists, and clerical staff were dispatched to the disaster areas to conduct health checkups, provide medical care, and give advice to workers at the crippled power plant and residents of the surrounding communities. As a member of the first group of the medical assistance team, Associate Professor Daizaburo Hirata (currently working at Mazda Hospital) was dispatched to Fukushima from the Department of Gastroenterology and Metabolism. The following story is based on Dr. Hirata's vivid account of what he experienced when dealing with radiation exposure in the disaster-stricken communities under the supervision of Professor Kenji Kamiya, Director of RIRBM.

Dr. Hirata left for Fukushima, carrying solid emergency food and PET bottles containing water. For the first few days, he had to live on the food and water that he carried on his person. He was forced to fetch water from a nearby river in order to flush the toilet. He collected a range of information while attending meetings to discuss what means of transportation to use in the event of personal injuries at the power plant.

In the photographs he took and brought back, we can clearly see the tense atmosphere in which our team members transported trauma patients by helicopter. We can also see scenes in which Dr. Koichi Tanigawa, a professor of emergency medicine and leader of the first-response group, wearing a protective full body suit, rushing to the disaster area to rescue sick and injured people. There was one specific story that made me appreciate how lucky we are to be able to live such a comfortable daily life. The episode was simply about how our team members were moved by the deliciousness of the curry rice served to them after several days living only on the emergency food rations that they had brought with them.

Fortunately, I am pleased to note, that since I took office as hospital director, the situation has improved to the extent that we have been able to gradually downsize our medical assistance system. Two years after the earthquake, it has become quite rare for us see the kind of horrifying scenes that were daily occurrences at the outset of our support efforts

in the disaster areas. Still, the life of the residents who returned home is hardly back to normal. Reportedly, they are still facing many problems, such as the lack of progress in decontamination processing and the lasting damage caused by misunderstandings about the effects of radioactive substances. The challenges they are facing hit home the importance of providing and disseminating accurate knowledge. With this awareness in mind, we are determined to continue fulfilling our responsibilities in cooperation with RIRBM.



Seeing off team members headed for Fukushima (Hiroshima Station)

Spending Tense and Hectic Days

Ryoichi Nishida

Former Executive Manager of the Management Support Office of Hiroshima University Hospital

Superintendent of Hiroshima Hiramatsu Hospital



I feel embarrassed to confess that when the massive earthquake first struck, it never occurred to me that the ensuing tsunami would cause the horrendous catastrophe that it did. Nor did I imagine, when watching the televised images of the tsunami, that the tsunami would cause a state of emergency at Fukushima No. 1 Nuclear Power Plant.

On March 11, 2011, Executive of Hiroshima University and Director of Hiroshima University Hospital Mitsuo Ochi was in Tokyo on business. I tried to reach him to confirm his safety and to discuss what needed to be done in the days to come. But it was to no avail because all the mobile phones were out of service. I spent many subsequent anxiety-filled hours awaiting the restoration of cellular service. It was not until dawn on March 12 that I was finally able to get through to Dr. Ochi.

After that, Hiroshima University, under the guidance of Dr. Ochi and President Toshimasa Asahara and as the tertiary radiation emergency medical institution for the Western Japan Block, began providing various types of assistance to the disaster-hit areas under the leadership of Dr. Kenji Kamiya, Director of the Radiation Emergency Medicine Promotion Center. Being responsible for back-office services, I spent my days constantly on alert and ready for whatever may happen next until I left Hiroshima University at the end of June that year.

When the earthquake hit, the DMAT team wasted no time and headed out for the disaster area by the early evening of that same day, traveling from Kure to Yokosuka in a Self-Defense Force vessel and from there driving to the disaster area. The next day, Hiroshima University established the Radiation Emergency Medicine Committee. With its headquarters set up in a meeting room on the third floor of the university hospital's outpatient ward, the Committee members, together with Shigeo Hayashi, Leader of the Medical Policy Office, and Hisaya Azuma, Clerical Supervisor of the Radiation Emergency Medicine Promotion Center, worked around the clock, dispatching staff members to the disaster areas, carrying out communication and coordination work with staffers working on site, and negotiating with the head office of the university corporation.

In retrospect, however, I never felt tired or pressured by these seemingly endless tasks, mainly because I had no concerns over the human, material, or financial resources that were to be needed for these activities. This was all thanks to the support and encouragement of President Asahara, Executive Ochi, Director Kazuaki Chayama of Hiroshima University Hospital, and Director Kamiya of the Radiation Emergency Medicine Promotion Center. This point is noted because it was said that unlike Hiroshima University, Nagasaki University was forced to reduce the number of nurses being dispatched due to a lack of financial resources.

As it was difficult for the university hospital alone to gather all the experts required for on-site relief activities, we asked the Technical Center to dispatch radiological technologists and the head office of the university corporation to dispatch clerical staff. Furthermore, from April 18th, we had the good fortune of being able to bring on staff retired office

workers of Fukushima University. The participation of all these staff members greatly facilitated our activities. Also, I will never forget the unobtrusive but strong support extended from Tomomitsu Kawamoto, Financial and General Affairs Executive, and Tetsuhiro Takeuchi, Head of the Office of the Secretary, both of Hiroshima University.

Meanwhile, I have been to the disaster area only once: I accompanied President Asahara when he was to attend a signing ceremony for a cooperation agreement between Fukushima Medical University, Hiroshima University, and Nagasaki University. At that time, the Tohoku Shinkansen was yet to fully resume service and trains were not operating on a regular schedule. From Nasushiobara station, which was then the final stop, we headed for Fukushima—still about 100 km away—by a car dispatched from Hiroshima University. I remember how the highway leading to Fukushima was buckled and undulating. We visited the Offsite Center and other facilities but our schedule was so tight that we were not able to spend enough time to properly thank our university staff members for their services in the disaster areas.

There are so many things in our disaster relief activities that are worth noting. I was greatly impressed, among other things, by the activities of Director Kamiya and Professor Yoshio Hosoi. I would also like to express my heartfelt respect for the dedicated on-site services of doctors from our hospital's department of emergency and critical care medicine led by Professor Koichi Tanigawa, Associate Professor Nobuyuki Hirohashi, and Assistant Professor Yasumasa Iwasaki. Dr. Takuma Sadamori and his staff built a TV conference system as well as wireless communications and global positioning systems, which helped us communicate with two vehicles dispatched from the university. I cannot emphasize enough how his service contributed to the success of our support activities.

In some respects, the recent disaster was undeniably man-made. Having been born and brought up in Hiroshima, I often visit the Peace Memorial Park. The latest catastrophe reminds me of the epitaph inscribed on the cenotaph that reads, "Rest in peace, for the error shall not be repeated." Although I am aware that there are debates over the interpretations of these words, I am convinced that no one will deny that we should never repeat such man-made disasters as the one we have recently experienced in the wake of this earthquake and tsunami. Now is the time to think hard again about the meaning of this epitaph.



The Radiation Emergency Medicine Committee meet frequently in response to the constantly changing situation