



Date : December 2, 2013

Venue : Japanese Red Cross Headquarter “Cross Lounge”

Agenda

■Opening speech

Mr. Tadateru Konoe, President, JRCS

■The Role of the Red Cross Nuclear Disaster Resource Center

Mr. Shuichi Nishijima, Director General, Red Cross Nuclear Disaster Resource Center

■Keynote Presentation: “Radiation Medicine in Japan”

Dr. Makoto Akashi, Executive Director, National Institute of Radiological Sciences

■Keynote Presentation 2: “Relief Activities Conducted by the Japanese Red Cross Society after the Fukushima Daiichi Nuclear Power Plant Accident and the Challenges for the Future”

Dr. Yoichi Watanabe, Deputy Director General, Fukushima Red Cross Hospital

■Video message: “Activities by Odagaisama Center”

Mr. Kazuhiko Amano, Tomioka Odagaisama Center for Supporting Reconstruction of Victims' Living

■Q&As

■Closing speech

Mr. Yoshiharu Otsuka, Vice-President, JRCS



Opening speech

Mr. Tadateru Konoe

President, the Japanese Red Cross Society

It is still fresh in our minds that the Great East Japan Earthquake and Tsunami not only deprived us of many precious lives but also caused enormous damage. Many people affected by the disaster are still facing difficulties. Particularly, the Fukushima Daiichi Nuclear Power Plant accident has forced 150,000 people to live as evacuees even now.

Importance of information in a nuclear disaster

Confusion due to lack of information was one problem in responding to the nuclear accident. Different information about possible influences from radiation came in one after another, which confused the residents living in the area surrounding the nuclear power plant, even people across Japan and in other countries as well. This confusion led to many damaging rumors in many ways. The experience renewed the recognition of the importance of correct information and effective communication in order to take appropriate steps.

Initiative by International Red Cross for nuclear disaster preparedness

At the moment, there are more than 400 reactors in some 30 countries around the world. Discussions as to whether nuclear power plants should continue to be operated or not affect energy policy of each nation. The Red Cross is not in a position to refer to it. However, we have to keep asking ourselves what the Red Cross should do in the event of a nuclear accident because the possibility of an accident cannot be denied as long as nuclear energy is used. Given that a nuclear accident would be highly likely to have a broad impact in many aspects even beyond national borders, countermeasures would be required to be taken internationally if such an accident occurs. With an awareness of this problem, the International Federation of the Red Cross and Red Crescent Societies adopted a resolution on strengthening preparedness to respond to nuclear disasters at its General Assembly in November 2011.

Mission of the Japanese Red Cross Society and role of the Red Cross Nuclear Disaster Resource Center

The mission of the Japanese Red Cross Society (JRCS) in this regard is to show the way to correctly understand the influence from radiation in the event of a nuclear disaster; to properly prepare and appropriately respond to it. There are two roles for the Red Cross Nuclear Disaster Resource Center in the near term: (1) to gather information on nuclear disasters and responses to them and to disseminate the information widely; (2) to create the guidelines for responding to nuclear disasters.



We are responsible for disseminating information on our experience in Fukushima to the international community. As the Red Cross, we will present guidelines for medical care, health management, psychological care, volunteering, response to vulnerable people, etc. After the Great East Japan Earthquake and Tsunami, many countries offered us warm support. We believe that disseminating the knowledge and experience learned from the Fukushima Daiichi Nuclear Power Plant accident widely to the international community will serve as our gratitude for the support we received. That will be the international contribution that we can do or only the JRCS can do with regard to preparedness for nuclear disasters. I hope that this seminar will be the first step towards it.

Keynote Presentation 1: “What is radiation emergency medicine?”

Dr. Makoto Akashi

Executive Director, National Institute of Radiological Sciences

The subject I was asked to speak about is “What is radiation medicine?” Our role and responsibility when engaged in radiation medicine is to know how we should diagnose and treat people who have been exposed to radiation, and how we can see how radiation has influenced the body.

Peculiarity of radiation exposure and social impact caused by nuclear disasters

You cannot feel if you are exposed to radiation or not. It takes some time until the symptoms appear. Therefore, people are very concerned about radioactive substances and radiation. Most people are familiar with radiation measurements such as gray (Gy) and Sievert (Sv). However, if you are told that the upper limit of exposure to radioactive substances is 100 becquerel (Bq) per kilogram of food, it is not easy to calculate from becquerel to sievert. On the other hand, the method of measuring radiation in real time is much more advanced than that of infectious diseases and chemicals, but sterilization and neutralization of radiation are impossible. In Fukushima the disadvantage is that decontamination is required to reduce radioactive substances. At the same time, the greatest feeling that we come away from the Fukushima Daiichi Nuclear Power Plant accident with is that a radioactive exposure accident or a nuclear disaster poses a significant impact on society.

Radiation influence on the human body

Humans are receiving radiation from both the natural environment and space. For example, Potassium-40 is a radioactive substance which always exists in the natural environment at a constant rate and it is said that there is 4,000Bq in the body of the average 60kg Japanese person. The radiation dose you receive depends on where you live. For instance, the dose that exists in Chiba, Tokyo and Kanagawa is not so high but it is a little higher along the coast of the Seto Inland Sea or in Gifu. The radiation exposure at the top of Mt. Fuji is about five times more than that in Tokyo, and you will be exposed to 7 μ Sv/h aboard a plane. Those doses are not so low, compared to those detected in Fukushima. However, there has been no report suggesting that the radiation from the natural world has caused any impact on our bodies.

Some people say that radiation or radioactive substances remain in a patient’s body just because he/she was exposed to it. But in fact, if a patient that has been exposed to gamma rays or X-rays comes to you as an outpatient and you touch the patient in examination or treatment, you will not be exposed to the radiation. Many people understand it, as they never tell their family to stay away from them when



being back home after receiving a stomach fluoroscopy or CT screening. There is no radiation remaining in the body. However, despite this fact, the phrase “radiation exposure” causes misunderstanding.

Radioactive substances are used in many ways such as luggage screening at airports, sterilization by gamma ray of needles and syringes used in hospitals, and blood for transfusion whose lymphocytes have been inactivated with radiation. Taking a chest X-ray as an example, the radiation dose per examination is 60 or 70 μ Sv. Only a fraction of a second generates the dose, meaning quite a high dose when it is used for one hour. Obviously, there is no harm to the body because the radiation is used for a very short time, but it is a reality that radiation with this high dose rate is used. As I have said, we are living an environment where radiation is used in many aspects in our lives. Therefore, it is important to understand radiation correctly and fear it appropriately.

Another concern is genetic influence. Studies have been conducted among children of atomic bomb survivors with many results in which any incidence of genetic diseases in humans has not been observed. In spite of that, unfortunately, there have been some newspaper reports that children of Fukushima are experiencing discrimination at school in this regard. To deal with the situation, it is also important for medical personnel to know that there are no scientific findings regarding incidence of genetic diseases from radiation exposure.

Radiation medicine system

The system to provide radiation medicine in case of a nuclear accident is already in place. The medical care will be organized by the National Institute of Radiological Sciences (NIRS). At the same time, Hiroshima University and the NIRS will lead the medical care for western Japan and eastern Japan, respectively, with networks of primary and secondary radiation emergency hospitals already created by local governments to respond to patients who are contaminated or exposed to radiation. Beyond this system the NIRS has three additional networks called Network Council for Radiation Emergency Medicine, Networks for Chromosome Analysis, and Radiation Emergency Medicine and Physical Dosimetry. If a person is exposed to radiation over their whole body, it is impossible to treat him/her in only one therapeutic area. Therefore, our institute has a cooperative relationship with universities and medical institutions that have experience with the medical care of patients together in the case of nuclear accidents. When the accident occurred in Tokai-mura, we obtained cooperation from specialists in various areas including dermatology and intensive care. In addition, mental and psychological care is indispensable and included in radiation medicine.

The section entitled “Nuclear Disaster Countermeasures” of the Japanese government’s “Basic Disaster



Management Plan” refers to the role of the Japanese Red Cross Society in case a nuclear disaster occurs. The Japanese Red Cross hospitals know their role as to what they should do when relief activities continue for a prolonged period, and I believe that the combination of capabilities of our institute and the Japanese Red Cross hospitals would bring three or four times greater effects than by each agency acting alone.

NIRS response to the accident at the Fukushima Daiichi Nuclear Power Plant

Our institute had established a radiation medicine team system which is similar to DMAT before the nuclear accident occurred. Our assumption was to send teams outside Japan in the case of a nuclear accident. However, unfortunately, the first dispatch of our team was made after the earthquake and tsunami in Japan. Fortunately, since cooperation with the Japan Self Defense Forces (JSDF) proceeded smoothly, the JSDF helicopter landed on the premises of the NIRS to carry our specialists to the affected area, followed by the 2nd and 3rd teams dispatched from our institute. On the day of the accident, the Internet, land-line telephones and mobile phones were not working at all. Amid the huge mess in which even the satellite telephone was only sporadically connected with the team in the affected area, we received a message from them saying that they were going to carry patients to the NIRS. We accepted the patients, looking for what we should do in this situation that we could not grasp well.

At evacuation centers in Fukushima, there were many evacuees whose radiation exposure level was measured above the level that needs decontamination. The effective and simple way for decontamination is to remove their clothes, but it was snowing outside and cold in the evacuation centers without any heating or electricity. Since the evacuees did not have any change of clothes, we were not able to ask them to remove their clothes. Also, there was no water available for decontamination. Under such circumstances, we found that there would be difficulties in the decontamination of those people. Therefore, we made the decision to raise the level for decontamination after reviewing the criteria mentioned in the Manual for First Responders in Radiological Emergency published by the IAEA. We came under a lot of criticism for the decision. However, we took the measures because it was impossible to tell elderly people not to go inside the centers.

At the Fukushima Daiichi Nuclear Power Plant, more than 2,000 workers are still working every day. If any patient cannot be carried to a medical institution because of his/her radiation exposure in case of any accident there, that would be against the original purpose of medicine. Radioactive contamination is not immediately fatal, but if someone suffer a cardiac infarction or cerebral hemorrhage and cannot receive treatment just because he/she is contaminated, that would go against the original point of medicine.



After the accident at the nuclear power plant in Fukushima, the NIRS accepted contaminated patients twice. The first acceptance was made for a JSDF official on March 14th when there was a hydrogen explosion at the power plant. The second acceptance was on March 25th for three workers at the plant who put their feet through contaminated water. For a case such as the first patient, I think it would not be impossible for an emergency medical institution to accept a patient on the assumption that they know about radiation protection and how to manage it.

There was one inappropriate case. A person who suffered a broken bone was transported from the Fukushima Daiichi Nuclear Power Plant to a nearby plant, the Fukushima Daini Nuclear Power Plant, but the patient could not be transferred to a hospital soon because the patient's radiation exposure dose was over the limit. Then, a hospital in Koriyama agreed to accept the patient on condition of repeated decontaminations of the patient, but the hospital had second thoughts and refused the patient while the ambulance was heading to the hospital. Eventually, the patient was hospitalized at the Fukushima Medical University Hospital, but it took more than 20 hours from the injury until the hospitalization. I think that this was also a case that could have been solved much earlier if medical personnel had correct knowledge.

Summary

It is important to have flexible criteria in case of a radiation accident. I think that unified cpm (count per minute) criteria to decide on decontamination or non-decontamination should not be applied to hospitals. If that is the case, hospitals are not required to accept any patient whose radiation dose is over the limit. Criteria should be flexible and should be ignored when responding to patients is prioritized. Otherwise, we would not expect any improvement for appropriate radiation medicine. If medical personnel and the public have correct knowledge, radiation medicine will be moving forward. I would greatly appreciate it if we could discuss with experts of the Japanese Red Cross Society how we can make sure to provide radiation medicine effectively.

We especially thank Dr. Akashi for providing us with the slides used in his [presentation](#) (In Japanese). The materials for the seminar are posted on the Archives. When using them, please note that:

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Keynote Presentation 2: “Relief activities conducted by the Japanese Red Cross Society after the Fukushima Daiichi Nuclear Power Plant accident and the challenges for the future”

Dr. Yoichi Watanabe

Deputy Director General, Fukushima Red Cross Hospital

It was in Fukushima in 1888 after Mt. Bandai erupted when the Japanese Red Cross Society (JRCS) conducted disaster relief activities for the first time. At the lakeside of Goshikinuma Ponds, you will see a monument to commemorate the place where disaster relief activities started in Japan. Since then, the JRCS has been engaged in relief activities in disasters. However, the relief activities following the accident at the Fukushima Daiichi Nuclear Power Plant had never been experienced, thus confusing our activities from time to time. Now, I would like to share with you what happened during our relief activities in Fukushima, data on “internal exposure screening” using an equipment called the whole-body counter, which our hospital began last year, and the challenges for the future.

In Fukushima, the population decreased from 2.02 million to 1.94 million after the earthquake and tsunami. As of October 2013, 95,000 people live in temporary housing in the prefecture and 50,000 people have been evacuated to other prefectures. Both numbers are quite high. The Fukushima Red Cross Hospital is 62km away from the Fukushima Daiichi Nuclear Power Plant. At the time of the earthquake, the number of physicians belonging to our hospital was 38 doctors and 4 residents, which is considerably short. The hospital focuses on emergency medical care and the number of patients carried in to our hospital by ambulance is the highest in the City of Fukushima, which is about 2,700 per year.

Fukushima Red Cross Hospital shortly after the Great East Japan Earthquake and Tsunami

Immediately after the earthquake occurred on March 11th, we took initial action based on “CSCA” (basic four elements for initial response in a disaster: Command & Control, Safety, Communication and Assessment), set up our disaster response headquarters and checked the safety of the patients and hospital staff. There was minor damage to the hospital building and I determined that hospital operations could continue. We informed the decision throughout the hospital over the public announcement system. As for essential utilities, power and water supplies stopped, which made the X-ray and blood examinations impossible. We responded to the power failure by using an in-house generator. The back-up generator supplied power until electricity came back the next day. Since the boilers and sterilization equipment were broken, the apparatus for operation were unable to be sterilized. Five days after the earthquake, the water supply was back and we were able to restart medical treatments as usual. In front of the entrance, we set up a triage area and accepted 34 patients with disease or injury on



the day of the earthquake. I also called a meeting twice a day with all physicians and managers from all sections who participated and shared information.

DMAT activities

On the night of the earthquake, we dispatched one DMAT (Disaster Medical Assistance Team) from our hospital to Minamisoma City Hospital; they provided initial treatments for patients with serious conditions and then transferred them to Fukushima Medical University Hospital by making two round trips between Minamisoma and the City of Fukushima overnight. At the same time, the DMAT conveyed the medical information in the affected area where the communications were completely disrupted and made a significant contribution to the emergency medical care during the acute phase of the disaster.

Dispatch of the Japanese Red Cross relief teams

I was dispatched to the affected area as the head of the Fukushima Red Cross Hospital Relief Team 1 on March 12th. In the City of Soma, we set up a first aid center at “Sports Arena Soma” and provided medical treatments. Three hours after we started medical treatments there, the JRC Fukushima Chapter told us: “The Fukushima Daiichi Nuclear Power Plant exploded, so all the JRCS relief teams in Hamadori should withdraw from the area and head to Kawamata.” Though there were many affected people at the evacuation centers, we withdrew from the area leaving them behind. I wonder if withdrawal was appropriate. We need to review that decision.

At the evacuation centers in Kawamata, there were many evacuees from the area around the nuclear power plant. Most of them asked us to prescribe their regular medicines they left behind while fleeing. There were other requests from the evacuees such as screening for radiation and asking for iodine tablets. However, since we did not expect the accident to happen at a power plant, we did not have the necessary equipment. Radiation measurement devices such as an air dosimeter, a portable personal dosimeter, or a GM survey meter were not standard items equipped for the Japanese Red Cross relief teams. Therefore, we could not respond to such needs of the evacuees. It was also estimated that many evacuees at the centers might have been exposed to radiation. A lot of members of the relief teams feared that they might suffer secondary exposure by contacting the people in medical examinations or treatments. Amid the uncertainty of the power plant accident, all the JRCS relief teams except for ours left Fukushima saying, “We cannot engage in relief activities in the area where our safety is not guaranteed.” After they left, the dispatch of the JRCS relief teams from outside Fukushima was temporarily discontinued.

Relief activities conducted by the Japanese Red Cross Society relief teams and the places of their activities

March 14th onwards, there were three large evacuation centers in Fukushima. The JRCS relief teams conducted the activities at two locations: Azuma Gymnasium and Kawahigashi Gymnasium evacuation centers. In total, 68 teams and 51 teams were dispatched to Azuma Gymnasium and Kawahigashi Gymnasium, respectively. According to the data released on December 31, 2011 by the JRCS, the total number of the relief teams sent to Fukushima through the end of September was 145, which was less than half of the teams sent to Iwate or Miyagi. On the other hand, Japan Medical Association dispatched as many as 263 teams to Fukushima. Compared to the activities done by DMATs and JMATS (Japan Medical Association Teams) in the affected area, the Japanese Red Cross Society relief teams left less impression in Fukushima.

On the morning of March 15th, the accidents that occurred on Unit 2 and 4 released a large amount of radioactive substances into the air. They were carried by the wind and reached above the City of Fukushima as plume. Unfortunately, the rainfall and snowfall made the substances land on to the soil, leading to the air dose rate of 24 μ Sv/h. Following that, our hospital made a plan to take shelter inside the hospital for at least 72 hours and wait for dose to decline in case the air dose rate exceeds 100 μ Sv/h. We prepared food to survive for three days for the inpatients and the staff. Furthermore, we measured the radiation in each hospital section and around the hospital and the values measured in the hospital showed between 0-2 μ Sv/h. We notified the hospital staff that there was no concern about the radiation level because it was quite low.

As of the end of April 2011, as the radioactive substances flew further to the northwest from the nuclear power plant, the reported data showed that the air dose rate was higher in the City of Fukushima than Minamisoma and Soma. I think that we should have resumed the JRCS relief activities in Soma and Shinchi, where the relief teams withdrew on March 12th, but where the area was later found to have a low dose of radiation measurement.

Relief activities provided for the evacuees during their temporary re-entry to the restricted zone

Relief activities were provided from May 22, 2011 to March 30, 2012. The residents who had been living in the restricted area located within a 20km radius of the nuclear power plant fled their homes with only the clothes they were wearing when they were ordered to evacuate on March 12th. Since then, they have been unable to return to their homes. The government responded to the residents' request for going home and getting their necessary items by supporting them to re-enter the area temporarily. During the re-entry period, the Japanese Red Cross relief teams provided health checks and medical treatments for the residents at the entry points. In particular, the elderly and people with chronic diseases were examined carefully and thoroughly to see whether the temporary return to their homes would affect to their health. During that period of time, 486 patients needed treatments due to the re-entry to the area. Most of the diseases and injuries they suffered were heat stroke, dehydration, hypertension which worsened, insect bites and injury to the hands and feet from debris. The number of

the Japanese Red Cross relief teams dispatched for the activities was 87. The radiation level the relief team members were exposed to was 4-5 μ Sv per day, which was quite low.

Our challenges for the future

The following year after the earthquake, the review meeting for the First Block consisting of the Japanese Red Cross chapters in Hokkaido and Tohoku areas was held. During the meeting, some challenges were raised from the relief activity experience as follows:

- The chapters to contact when requesting for relief activities and patient transportation need to be clarified.
- The Japanese Red Cross Society National Headquarters should clarify the scope of relief activities.
- A system for giving an order swiftly on radiation level to discontinue relief activities is required.

Since the following year of the earthquake, a lecture for radiation emergency medicine in disaster activities has been given at the National Red Cross Relief Team Seminar. I appreciate the initiative taken by the JRCS. Guidelines for Relief Activities under Nuclear Disasters were also created. In the guidelines, a course of action is described that the JRCS relief activities will be conducted in the event of a nuclear disaster as long as cumulative doses of radiation do not exceed 1mSv during the activities. Also, carrying a personal dosimeter, a GM survey meter and a dosimeter for measuring the air dose rate by relief team members is incorporated into the guidelines. I am confident that the team members are able to engage in relief activities following the guidelines without anxiety. However, in addition, it needs to be fully considered on how to respond to a possible case in which cumulative doses of radiation exposed exceeds 1mSv, particularly if many people will still stay at evacuation centers.

We need to “understand radiation correctly and fear it appropriately” and make a judgment calmly. Soon after the earthquake and tsunami occurred, there were rumors that the entire Fukushima area was contaminated. In an attempt to eliminate the harmful rumors, I believe that the right knowledge about radiation and accurate data after the nuclear power plant accident needed to be provided.

Screening for internal exposure using the whole-body counter

I would like to share with you what our hospital is doing in screening for internal exposure with the whole-body counter. The screening is to detect radioactive substances in the body. The possible substances to be detected in the body at the moment are cesium 134 (half-life: 2.1 years) and cesium 137 (half-life: 30 years). The detection limits are 180Bq and 200Bq, respectively. The screening is done in the environment with a very low background dose. The values are measured while standing for about two minutes. So far, 13,320 people have been screened. Of 12,310 whose measured results are already



available, 12,103 people (98.3%) are found to be under the detection limits. There are 207 people whose values were above the limits and the detection rate was 1.68%. Looking at the results by radiation dose and age, the people with a high Becquerel value were all 40 years old or above. The data suggests that families with little children are paying close attention to the intake of food, showing less internal exposure of radiation.

It is important to continue to screen the affected people using the whole-body counter and educate them on being more conscious about food intake in order to reduce internal exposure.

Fukushima Red Cross Hospital's challenges

What Fukushima Red Cross Hospital should do is to build a new hospital building as soon as possible where people in the community can feel comfortable when visiting us and seeing a doctor. In addition, since more people living in temporary housing are getting health problems due to stress, we would like to offer health check-ups and psychological care actively. We will also focus on check-ups to promote preventive medicine and provide open lectures for the community and health consultations about lifestyle-related diseases. With regard to emergency medical care, we will focus on it more than ever. Per request from Fukushima Medical University, we will collaborate with the university in co-hosting an international conference on medical care in disasters, providing education and training about radiation disasters and working on other projects. The infrastructure and database for information on medical care in disasters and the robust information network for emergency medical care by connecting base hospitals in Fukushima are going to be in place. Based on those infrastructure and network, we will focus on realizing more appropriate emergency medical care. We will work on the challenge of building our new hospital under the new concept: "We will go for better medical care to protect lives, health and dignity of human beings," as the philosophy and to "Bring reassurance and hope for the future of Fukushima," as the slogan.

Conclusion

The mission statement of the Japanese Red Cross Society states: "We gather our wishes to save people who are suffering, and protect lives, health, and dignity of individual human beings under any circumstances." Keeping this in mind, we will work towards better emergency and disaster medical care.

Presentation is available [here](#).