Manual for Relief Activities under Nuclear Disasters

May 2013
(Revised in March 2016)

日本赤十字社
Japanese Red Cross Society

Index

Introduction

2 years have passed since the Great East Japan Earthquake and Tsunami outbreak. Once again I would like to offer my sincere condolences to all who were killed by the disaster, and also I would like to express my sympathies to all the affected people.

The Japanese Red Cross Society has dispatched the relief teams from all over the country to the affected areas since the day one of the Great East Japan Earthquake and Tsunami, in Fukushima Prefecture relief teams have started their relief activities at the coastal cities, towns and villages.

However, in the Japanese Red Cross Society relief activities guidelines book there were no standards to follow in the event of a nuclear disaster. Therefore, when the Tokyo Electric Power Company Fukushima Daiichi Nuclear Plant Accident occurred, the safety of the relief teams could not be guaranteed.

As a result, on the evening of March 13th the Chapter staff and relief teams met at the Fukushima Chapter to discuss the relief activity measures under a radiation environment. During the meeting it was determined that the Fukushima Chapter would not be able to guarantee the safety of team members against the radiation. Therefore, each relief team were to contact their own chapter or hospital to receive orders directly from them. As a result outside relief teams left Fukushima one after another.

Subsequently, on March 15th the Japanese Red Cross Society decided that relief activities would not be performed within a 30 kilometer radius from the affected nuclear power plant. After March 22nd the Japanese Red Cross Society dispatched the Radiation Emergency Medical Care Advisors to Fukushima Chapter and preparation for the necessary protective equipment and materials had started. Finally on April 22nd with the safety measure structure developed and with decision permission from the Japanese Red Cross Society the relief activities gradually restarted.

Unfortunately because a clear standard for safety confirmation for the relief teams under a radiation environment did not exist, and also because the necessary equipment and materials were not prepared, the relief activities in Fukushima Prefecture were not necessarily performed as desired. From these painful experiences on the Great East Japan Earthquake and Tsunami, the Japanese Red Cross Society have learned an important lesson: From now it is important that the necessary materials and equipment are prepared, relief teams understand radiation clearly and that they follow the guidelines provided for the standard behavior of what to do in the event of a nuclear disaster.

The relief teams of the Japanese Red Cross Society are not professional radiation emergency medical care teams. Therefore, naturally there is a limitation on the nuclear disaster responses. However, in the event of radiation damages under complex disasters, the cooperation between the concerned medical institutions as well as the collaborative relationships between the radiation emergency medical care institutions and the disaster medical care institutions are very important. For this reason it is now essential for the Japanese Red Cross Society to clarify what can be done as well as what cannot be done.

With the background described above, and hereby, with the guidance from the internal and external experts such as Dr. Masao Tomonaga, Director General of Japanese Red Cross Nagasaki Genbaku Hospital, Dr. Makoto Akashi, Executive Director at National Institute of Radiological Sciences and Dr. Hisayoshi Kondo, Director at National Disaster Medical Center, we have published the activity manual under nuclear disasters for the relief teams of the Japanese Red Cross Society.

Based on the manual, starting in 2013, by preparing for the necessary protective equipment and materials and setting up the safety measure facilities for the relief teams, we will steadily strengthen our capabilities following a disaster.

March 2013

Hiroki Tomita
Executive Director General
Operations Sector
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Chapter 1　Course of Action and Code of Conduct for the Relief Team

1. Course of Action

In the event of a nuclear disaster, the Japanese Red Cross Society (hereinafter called “JRCS”) will conduct the relief activities outside of an area restricted by the national/local authorities to enter (hereinafter called “restricted area”), as long as cumulative doses of radiation do not exceed 1 mSv during an activity.

2. Code of Conduct for the Relief Team

(1) In the event of an actual or a potential nuclear disaster, a relief team member shall undergo a special medical examination, mainly a medical interview, prior to the dispatch. (See Reference 3.) The permission of the dispatch to the affected areas shall be determined and authorized by the dispatching head of the Red Cross facility. Furthermore, if at all possible, the relief team shall be staffed by a radiological technologist who will pay attention to the sufficient safety measures during the relief activities.

(2) The relief team members shall carry a complete set of radiological protective equipment including a protective suit, a personal digital dosimeter, and iodine tablets. In addition, if at all possible, each relief team shall carry a dosimeter for measuring the air dose rate and a GM survey meter for body contamination screening. In order to guarantee the true and real measurements of the radiation exposure of each relief team member, these personal digital dosimeters, shall be examined and adjusted beforehand for their precise specified functions and accuracies.

(3) At the Local Chapter Disaster Control Headquarters in the affected area (hereinafter called “Local Chapter Disaster Control Headquarters”), the relief team member shall gather the information on the nuclear disaster and its associated safety measures, while confirming any instructions or considerations concerned with their activities.

(4) Each relief team member shall measure his/her radiation exposure levels on a continuous basis during the activity period and document his/her own radiation exposure levels at the end of each daily operation. If the cumulative dose of radiation is in danger of exceeding 1 mSv, the relief team leader shall mandate him/her to discontinue his/her activities and evacuate to a safety area.

(5) When dealing with the evacuees from the restricted areas, the relief team shall perform its activities under the condition of the integrated accommodating system consisting of the screening, decontamination, and the medical relief by the local authorities, following the instructions by the professionals engaging in these activities. Furthermore, the relief team shall define its own scope of the medical relief activities, and shall thoroughly publicize them to every authority concerned.

(6) Upon the completion of the relief activities and when pulling out of the affected areas the relief team shall submit the records of each team members’ radiation exposure measurements to the Local Chapter Disaster Control Headquarters.

The Local Chapter Disaster Control Headquarters shall in turn submit the radiation exposure measurement records (hereinafter called “radiation records”) to the JRCS National Headquarters. The JRCS National Headquarters shall lock up and maintain the radiation records and also send a copy of the radiation records to the Red Cross Hospitals that dispatched the relief team members to the affected areas.

(7) The head of the Red Cross facility, who dispatched the relief team members, shall make certain that any individual member with a cumulative exposed dose measurement exceeding 1 mSv shall not be engaged in nuclear disaster relief activities for the period of 1 year from the day of the excess, except for the radiation workers whose cumulative exposed dose measurements are separately specified by the government.

Reference 1: The concept for the 1 mSv cumulative dose of radiation criteria

1. Respecting the individual dose of radiation limits advised by the International Commission on Radiation Protection (ICRP)

   - The limit of the dose set by ICRP is defined as the base to restrict the effective individual dose of radiation from various radiation sources as the total amount. The specific limit value of the dose of radiation is defined according to the concept to prevent the deterministic effect as well as to minimize the stochastic effect as low as reasonably achievable.

     As for the specific tissues such as the crystalline lens and the skin, the limit of the dose of radiation is defined based on the individual threshold from the point of view to prevent the deterministic effect.

     About the stochastic effect such as cancer and the genetic diseases, in case of a radiation worker, the dose level corresponding to the lowest unacceptable dosage is estimated at 20 mSv annually (equates to the life time dose of radiation of 1 Sv).

     In case of the public, the estimated result of the age-specific mortality risk by a life time dose of low level radiation and the 1 mSv annual dose of radiation caused by natural background radiation exposure excluding the radon exposure is taken into consideration. Therefore the effective annual dose value of 1 mSv is advised as the limit of dose.

     Incidentally, the limit of dose has been set in order to restrict the individual dose of radiation, and therefore, it restricts the total amount of the radiation doses from the entire sources of radiation (however, the medical radiation exposure and the natural background radiation exposure are excluded).

2. Referring to the advice by the International Committee of the Red Cross (ICRC)

   - As a result of the Fukushima Nuclear Power Plant Accident, the nuclear disaster experts from ICRC visited the Japanese Red Cross Society on March 19th, 2011 and gave advice on the nuclear disaster handling. The contents of the advice is as follows:

     - Any relief team member who has not received the nuclear disaster training is considered to be the same as the general public, and therefore, he/she is limited to be exposed to the upper limit of 1 mSv per dispatch based on the ICRP advice.
     - The relief team member shall carry a personal dosimeter during the relief activities.
     - In order to shorten the exposure time, the relief team member shall evacuate to the safe area and rest at night.
     - Maintain the structure that the experts can always give advises.
     - Record the place and the length of time spent during the activities and the radiation exposure levels of each relief team member.

   Japanese Red Cross Society referred to these recommendations to perform the relief activities in Fukushima.

Reference 2: The area of activities allowed based on 1 mSv cumulative dose of radiation
(Incorporating the Tokyo Electric Power Company Fukushima Nuclear Power Plant Accident as an example)

- As a base, the activity durations for the JRCS relief team are 3 days for the initial primary dispatch, 5 days or less for the secondary dispatch, and 1 week or less thereafter, respectively.

- Supposing that the relief team continuously performs the relief activities for 3 days ceaselessly at the site where the average hourly air dose rate is 10 µSv, the cumulative dose of radiation will be estimated at 720 µSv (10 µSv/hour x 24 hours x 3 days). However, this is just an imaginary case assuming the relief team member stayed outdoors for the maximum of 24 hours a day and therefore, if he/she moves during the night to a place where the radiation level is lower, the influence on the dose of radiation can be further reduced.

- Figure 1 (page 4) indicates the air dosage measurement points and their corresponding measured values in the area at 20 km beyond Tokyo Electric Power Company Fukushima Nuclear Power Plant on March 17th, 2011 (source: Ministry of Education, Culture, Sports, Science and Technology).

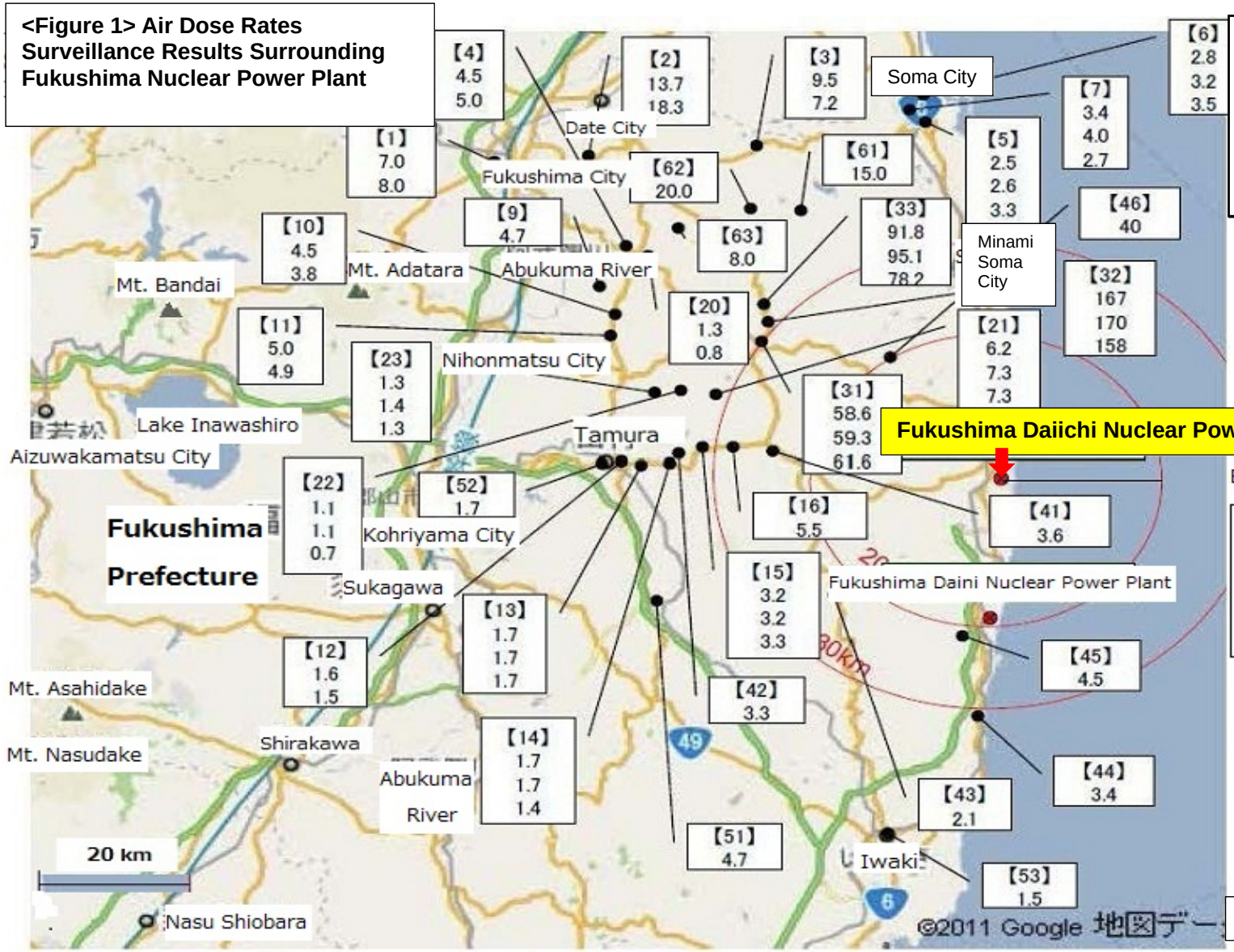
  In certain places like Measurement Point of 32, higher air dose rates greater than 100 µSv/hour were detected and therefore, hindered the relief activities under the 1 mSv cumulative dose of radiation limitation even though they were outside of the evacuation zone (subsequent restricted zone, etc.). (However, likewise a sufficient time allowance required for the relief team to evacuate to the safer areas could be secured).

  Meanwhile, at the vast majority of the places, the air dose rates were 10µSv/hour or less, and hence one could easily understand that the relief activities for 3 days or more would be well within their capacity in these places.

- Furthermore, back in those days, while the outside air dose rates surrounding Fukushima Red Cross Hospital were 8 to 10 µSv/hour, the air dose rates inside the hospital were 1 µSv/hour and less. This means that when performing the relief activities indoors the actual air dose rates are considered lower.

- Consequently, for the relief activities at the nuclear disaster, it is important to comprehend the air dose rates at the place of the relief activities and the individual cumulative dose of radiation and to keep a handle on the situation while performing the activities calmly without haste.

<Figure 1> Air Dose Rates Surveillance Results Surrounding Fukushima Nuclear Power Plant



Date of the measurements: March 17, 2011; from 9:20 to 17:43

●: Denotes the measurement points

Unit: μSv /hour

Quoted from the Ministry of Education, Culture, Sports, Science and Technology homepage. Translated by the Japanese Red Cross Society.

Reference 3: Required Additional Medical Examinations

The required additional medical examination shall be performed mainly in the form of a medical examination by interview.

The existence of radiation exposure and subjective symptom history shall be checked and evaluated, and if the physician deems it necessary, the examination based on the ones for radiologists, listed on the Table 1 shall be taken.

Ordinance on Prevention of Ionizing Radiation Hazards

(Medical examination)
Article 56

1. The employer shall let the worker, who is regularly engaged in radiological operation and entering the controlled area, undergo a series of medical examinations listed below by a physician at the time of hiring or upon transferring to the concerned operations and periodically every 6 months thereafter.

   (1) Check and evaluate the existence of radiation exposure (for the person with the radiation exposure, the duration, place and the details of the activities, the existence of subjective symptom, and other items related to the radiation exposure).
   (2) The number of leukocytes and the differential leukocyte count.
   (3) Inspection of the erythrocyte count and the inspection of the hemoglobin content or the hematocrit value.
   (4) Eye examination concerning cataracts.
   (5) Skin Examination.

2. In regards to the examination items listed in the Section 1 above, for those that should be performed at the time of hiring or when transferring to the concerned operations, depending on the types of radiation sources the items categorized in (4) can be skipped.

3. In regards to the examination items listed in the Section 1 above, for those that should be performed periodically, upon physician recommendation items categorized in (2) through (5) can be skipped.

4. Regardless of the orders described in the Section 1 above, <u>in regards to the medical examinee, if the cumulative dose of radiation in the prior year does not exceed 5 mSv or there is no possibility of accumulating doses exceeding 5 mSv in the current year, then items categorized in (2) thorough (5) need not be performed unless the physician determines their needs.</u>

Quoted from the Ministry of Health, Labor and Welfare homepage

<Table 1>

Reference 4: Examples: Dose of radiation exposure record of relief team members

Individual radiation dose control

Individual radiation dose record (for a relief team)

Monday, February 8, 2016

Dispatched from:	Name:	Occupation:	Measurement started:		Serial No. of personal dosimeter:	Recorded:		Cumulative personal dose:	Unit:	Personal dose for the day:	Unit:	Gear worn during activity:	Provided activity in:	Stayed overnight at:	Notes:
			On (Date):	At (Time):		On (Date):	At (Time):								
ABC Red Cross Hospital	Kentaro Shinjo	Physician	2016/02/08	6:30	203F6995	2016/02/08	14:22	0.0	µSv	0.0	µSv	Red Cross uniform	XX Community Center	XX Municipal Office	
ABC Red Cross Hospital	Satomi Nakagawa	Nurse	2016/02/08	6:30	203F6945	2016/02/08	14:23	0.1	µSv	0.1	µSv	Red Cross uniform	XX Community Center	XX Municipal Office	
ABC Red Cross Hospital	Hiromi Ikegami	Nurse	2016/02/08	6:30	203F6955	2016/02/08	14:25	0.1	µSv	0.1	µSv	Red Cross uniform	XX Community Center	XX Municipal Office	
ABC Red Cross Hospital	Hironobu Takahashi	Nurse	2016/02/08	6:30	203F6965	2016/02/08	14:30	0.1	µSv	0.1	µSv	Red Cross uniform	XX Community Center	XX Municipal Office	
ABC Red Cross Hospital	Yutaka Kawada	Administrative staff	2016/02/08	6:30	203F6975	2016/02/08	14:23	0.0	µSv	0.0	µSv	Red Cross uniform	XX Community Center	XX Municipal Office	
ABC Red Cross Hospital	Shinichi Nakashima	Administrative staff	2016/02/08	6:30	203F6980	2016/02/08	14:25	0.0	µSv	0.0	µSv	Red Cross uniform	XX Community Center	XX Municipal Office	
ABC Red Cross Hospital	Hibiki Sugishita	Radiological technologist	2016/02/08	6:30	203F6985	2016/02/08	14:27	0.0	µSv	0.0	µSv	Red Cross uniform	XX Community Center	XX Municipal Office	

<Table 2>

Individual radiation dose record (for each team member)

Dispatched from:	Name:	Occupation:
ABC Red Cross Hospital	Kentaro Shinjo	Physician

Activity period:	Serial No. of personal dosimeter:	Measurement started:		Cumulative personal dose (μSv):
		On (Date):	At (Time):	
2016/02/08-2016/02/10	203F6995	2016/02/08	14:22	0.3

Recorded:		Cumulative personal dose:	Unit:	Personal dose for the day:	Unit:	Gear worn during activity:	Provided activity in:	Stayed overnight at:	Notes:
On (Date):	At (Time):								
2016/02/08	14:22	0.0	μSv	0.0	μSv	Red Cross uniform	XX Community Center	XX Municipal Office	
2016/02/09	15:30	0.1	μSv	0.1	μSv	Red Cross uniform	XX Elementary School	XX Municipal Office	
2016/02/10	17:50	0.3	μSv	0.2	μSv	Red Cross uniform	XX Town	XX Municipal Office	

<Table 3>

Chapter 2 Radiation Emergency Medical Care Advisor

1. Appointment and Placement of the Radiation Emergency Medical Care Advisors

(1) In the event of an actual or a potential nuclear disaster, in order to perform the relief activities under a radiation environment safely and properly, the JRCS shall select and place the Radiation Emergency Medical Care Advisors, consisting of a radiological expert (physician) and a radiological support member (radiological technologist) at the Local Chapter Disaster Control Headquarters in the affected area and at the Disaster Control National Headquarters, as needed.

(2) The JRCS National Headquarters shall, in advance, appoint well-qualified persons to be Radiation Emergency Medical Care Advisors, and shall concurrently renew the persons' data, as needed, to share with the Local Chapters and the facilities.

(3) The appointment to the Radiation Emergency Medical Care Advisors shall be given by the JRCS President upon the recommendations from the Presidents of Chapters.

2. Roles of the Radiation Emergency Medical Care Advisor

(1) Radiological Expert (physician)

A. Preliminary education on safety measures for the relief team members
   (a) Knowledge about radiation
   (b) How to put on and take off the protective suit
   (c) How to use the dosimeters

B. Advice to the relief teams regarding the activities
   (a) Advice on further development of the activities
   (b) Informing the relief team members of whether they need to wear a protective suit or not
   (c) Informing the relief team members of whether they need to leave the activity area immediately or not
   (d) Informing the relief team members of whether they need to take iodine tablets or not

C. Subsequent education on safety measures for the relief team members
   (a) Health care based on the dosimeter measurements
   (b) Considerations in their future life

D. Collaboration and cooperation with a JRCS disaster medicine coordination team

E. Response to other necessary matters according to instructions or requests from the JRCS Society National Headquarters

(2) Radiological Support Member (radiological technologist)

A. Preliminary education on safety measures for the relief team members
   (a) Conducting tasks ordered by the Radiological Expert

B. Record management of the air dose rate in the activity area and personal radiation dose, etc. of the relief team members
   (a) Comprehending the air dose rates by obtaining information from public authorities, etc. and by the air dose rate survey meter
   (b) Record management of the relief team members' dose of radiation exposure

C. Management of radiation survey meters/dosimeters and protective suits
(a) Maintenance of radiation survey meters/dosimeters, etc.
(b) Record management of the lending and return of the dosimeters
(c) Replenishment of protective suits, distribution to the relief team members, and management of the lending and return record for the protective suits.

D. Response to other items ordered by the Radiological Expert

3. Dispatch of the Radiation Emergency Medical Care Advisor

(1) In the event of an actual or a potential nuclear disaster, JRCS Headquarters shall immediately select the Radiation Emergency Medical Care Advisors to be dispatched to the Local Chapter Disaster Control Headquarters in the affected area and the Disaster Control National Headquarters as needed, and shall request such dispatch to the Chapters where the Radiation Emergency Medical Care Advisor belongs.

(2) The Chapters, upon receiving the request, shall dispatch the Radiation Emergency Medical Care Advisors to the Local Chapter Disaster Control Headquarters or the Disaster Control National Headquarters.

(3) The Disaster Control National Headquarters shall prepare a course of action for the disaster relief activities and the specific plan according to the JRCS National Headquarters' guidelines for disaster relief activities arrangements. In preparing them, the Disaster Control National Headquarters shall follow the advice from the Radiation Emergency Medical Care Advisors dispatched to the JRCS National Headquarters to consider the safety of the relief team members, etc.

(4) The Local Chapter Disaster Control Headquarters shall follow the advice from the Radiation Emergency Medical Care Advisors and perform the medical relief activities by the relief teams while paying particularly close attention to the safety measures. The Local Chapter Disaster Control Headquarters shall also manage the relief team members' status of exposure to radiation, considering the possibility of their exposure to radiation.

Chapter 3　Responses from the Radiation Emergency Hospital

1. Medical Activities of the Radiation Emergency Hospital

In the event of an actual nuclear disaster, based on requests from the Nuclear Emergency Control Headquarters established by the government or from local authorities, the radiation emergency hospitals (Note 1) in the affected area as well as Hiroshima Red Cross Hospital & Atomic-bomb Survivors Hospital, Japanese Red Cross Nagasaki Genbaku Hospital and Fukushima Red Cross Hospital (hereinafter called “radiation emergency hospitals”) shall perform the radiation emergency medical care activities defined as feasible at each designated hospital (Note 2).

Note 1: For the preparedness against a nuclear disaster, each local authority has designated hospitals located in their territory as “radiation emergency hospitals”. The Japanese Red Cross hospitals designated as “radiation emergency hospital” are listed on Table 4.

Note 2: The radiation emergency medical care activities defined as feasible at each designated hospital are described in Table 5.

2. Dispatch of the Radiation Emergency Medical Care Specialists

When the local Chapter of the affected area requests and the National Headquarters recognizes the necessity, the headquarters shall request for dispatch of radiation emergency medical care specialists from the Chapters outside of the affected area which have designated “radiation emergency hospitals” in their territory.
The requested Chapter shall, if at all possible, dispatch the radiation emergency medical care specialists consisting of physicians, radiological technologists and nurses to the hospitals in the affected area in order to support radiation emergency medical care activities.

3. Roles of the Radiation Emergency Hospitals

(1) The Japanese radiation emergency medical care structure consists of “Primary Radiation Emergency Hospital” that performs the primary care and emergency medical care regardless of the existence of the body contamination, “Secondary Radiation Emergency Hospital” that performs specialized medical care, and “Tertiary Radiation Emergency Hospital” that performs highly specialized medical care. The radiation emergency hospitals of the Japanese Red Cross Society are listed on Table 4.

Chapters	Hospitals	Designation
Hokkaido Chapter	Date Red Cross Hospital	Primary Radiation Emergency Hospital
Miyagi Chapter	Ishinomaki Red Cross Hospital	Primary Radiation Emergency Hospital
Fukushima Chapter	Fukushima Red Cross Hospital	Prefectural Residents’ Health Care Management & Survey Facility
Ibaraki Chapter	Mito Red Cross Hospital	Primary Radiation Emergency Hospital
Fukui Chapter	Fukui Red Cross Hospital	Primary Radiation Emergency Hospital
Shiga Chapter	Otsu Red Cross Hospital	Primary Radiation Emergency Hospital
Shiga Chapter	Nagahama Red Cross Hospital	Secondary Radiation Emergency Hospital
Kyoto Chapter	Maizuru Red Cross Hospital	Primary Radiation Emergency Hospital
Shimane Chapter	Matsue Red Cross Hospital	Primary Radiation Emergency Hospital
Hiroshima Chapter	Hiroshima Red Cross Hospital & Atomic-bomb Survivors Hospital	Nuclear Radiation Effects Counter Measure Research Institute
Ehime Chapter	Matsuyama Red Cross Hospital	Secondary Radiation Emergency Hospital
Saga Chapter	Karatsu Red Cross Hospital	Secondary Radiation Emergency Hospital
Nagasaki Chapter	Japanese Red Cross Nagasaki Genbaku Hospital	Nuclear Radiation Effects Counter Measure Research Institute

<Table 4>

(2) The radiation emergency medicine system in Japan is displayed on Table 5 below:

Categories	Primary Radiation Emergency Hospital	Secondary Radiation Emergency Hospital	Tertiary Radiation Emergency Hospital
Medical Care Functions	**Outpatient Care**	**Inpatient Care**	**Specialized Inpatient Care**
Medical Institutions	1. Evacuation center (First-aid station) 2. Health center 3. Plant medical facilities (site first-aid stations) 4. Vehicles, ships, aircraft 5. Medical facilities designated in local disaster prevention plans*[1,2]	Medical facilities designated in local disaster prevention plans	1. National Institute of Radiological Sciences (includes the Institute's Radiation emergency medical care network council) 2. Local tertiary radiation exposure medical institutions
Surveillance, Screening, Dose Evaluation	1. Surveillance of body contamination 2. Screening 3. Individual dose evaluation with a simple dosimetry	1. Surveillance of body contamination 2. Screening 3. Specialized individual dose evaluation (technical support from the tertiary radiation exposure medical facilities)	1 Surveillance of body contamination 2 Highly specialized individual dose evaluation
Decontamination	Simple decontamination like wiping off	Decontamination using shower facilities	In addition to the decontamination processes at the primary and the secondary radiation exposure medical facilities, a highly specialized decontamination like the lung wash as needed
Medical Treatments	1. Radiation syndrome preventive treatment like disturbing potassium iodide 2. Resuscitation (ACLS*[3]) 3. Complicated injuries (wounds, burns) 4. Initial treatments for internal exposure patients	1. Treatment for patients with local exposure starts 2. Treatment for patients with high dose exposure starts 3. Treatment for complicated injuries 4. Treatment for patients with internal exposure starts	1. Treatment for patients with critical local exposure 2. Treatment for patients with high dose exposure 3. Treatment for serious complicated injuries 4. Treatment for patients with critical internal exposure
Equipment and Materials	Equipment and materials for the medical service workers to perform emergency outpatient care	Decontamination shower facilities, equipment and materials for the wide area disaster medical information system	Specialized equipment and materials for dose of radiation exposure evaluation, equipment and materials for the wide area disaster medical information system

Categories	Primary Radiation Emergency Hospital	Secondary Radiation Emergency Hospital	Tertiary Radiation Emergency Hospital
Inter-Hospital Cooperation	1. Outpatient care 2. Outpatient care, then transfer to the other hospital	1. Inpatient care 2. Treatment starts, then transfer to the other hospital	Transfer between specialized medical institutions
Training, Practice	1. Perform training and practice 2. Prepare radiation emergency medical care manual	1. Perform training and practice 2. Prepare radiation emergency medical care manual 3. Raise radiation medical care leaders	
Support Functions	1. Cooperation between medical institutions and nuclear operators (various survey meters and dispatch of radiation administrator) 2. Cooperation between nuclear operators, support	1. Technical support and dispatch of specialists to primary and secondary radiation exposure medical institutions 2. Lending first aid medical equipment and materials for nuclear emergencies	1. Cooperation within the regional blocks 2. Technical support and dispatch of specialists to other radiation exposure medical institutions 3. Lending first aid medical equipment and materials for nuclear emergencies
Notes	1. Medical care functions can be divided and shared by each other within the multiple medical institutions including the existing evacuation centers, health care centers, and emergency medical institutions. 2. Streamline the facilities capable of providing primary emergency medical care for the radiation exposed patients.	1. At the existing medical institutions, the medical care functions like dosimetry, decontamination and emergency medical care can be divided and shared by each other within the multiple medical institutions. 2. For opening or relocating the emergency radiation exposure medical institutions, it is desirable to have the facilities, equipment and the materials, necessary for the emergency radiation exposure medical care, streamlined within the same medical institution.	

*1 Streamlines the facilities capable of providing primary emergency medical care for the radiation exposed patients (institutions near the nuclear facilities).

*2 Includes the medical institutions capable of providing emergency support contracted by the business facilities.

*3 Advanced Cardiac Life Support

Quoted from the Disaster Medical Center, National Hospital Organization homepage

<Table 5>

Chapter 4　Education and Seminar of Radiological Protection for the Relief Team Members

1. Nuclear Disaster Response Basic Training Session in JRCS Zones

Each JRCS Zone shall organize a Nuclear Disaster Response Basic Training Session for its relief team members to allow them to learn basic knowledge about radiation and the radiation emergency medicine system in Japan, etc. and how to use radiation protective equipment and materials. The purpose of the session is to allow the relief team members to provide relief activities under a radiation environment in a safe and secure manner.

2. Education and training on basic knowledge about response to nuclear disasters for relief team members at JRCS Chapters

Each Chapter shall provide education and training opportunities to disseminate the safety measures for the relief activities under a radiation environment at general training sessions, etc. held for relief team members within the territory of the Chapter.

3. JRCS National Headquarters' response

The JRCS National Headquarters shall obtain information about developments of nuclear disaster preparedness by the Japanese government and provide necessary information to the Radiation Emergency Medical Care Advisors, etc.

Chapter 5 Basic Knowledge of Radiation

In the event of a nuclear disaster, knowledge of radiation and radiological protection are most important to perform the relief activities. The relief team member himself/herself must have an accurate knowledge of radiation to relieve excessive fear on radiation.