

Results of Hearing with Experts on Response to Victims of Occupational Injury and Diseases during Emergency Works at Nuclear Facilities

20 February 2015

1 Current status and issues

1. Current status

- (1) The nuclear facility employer is responsible for putting in place a medical care system for treating victims of occupational injury and diseases during emergency works at a nuclear facility.
- (2) However, Tokyo Electric Power Company failed to secure medical staff, including medical doctors, nurses, and medical radiology technicians. Such staff should have conducted initial assessment, decontamination, emergency medical treatment, triage, and selection of hospitals for the victims of occupational injury and disease at the nuclear facility during the emergency works following the nuclear accident at Fukushima Daiichi Nuclear Power Plant.
- (3) It was revealed that a worker died of acute myocardial infarction (recognized as an occupational injury and disease) and that TEPCO's response to occupational injury and disease victims was inadequate. In response to an instruction from the official residence of the Prime Minister, an emergency medical room (ER) was set up in the Fukushima Daiichi Nuclear Power Plant. The Ministry of Health, Labour and Welfare (MHLW) requested that the University of Occupational and Environmental Health, Japan, and rosai hospitals (hospitals for laborers) dispatch medical doctors (which continues now). Currently, medical staff stand by at the power plant 24 hours per day.
- (4) Since then, medical staff members, etc. have been sent to Tepco's Fukushima Daiichi Nuclear Power Plant by the "Tepco Fukushima Daiichi Nuclear Power Plant Emergency Medical System Network" of medical doctors for which Hiroshima University serves as the secretariat.

2. Issues

- (1) The basic disaster management plan requires nuclear facility employers to maintain and manage a facility that can provide first-aid treatment and decontaminate victims of exposure and contamination, and establish a medical system for treating radiation exposure.
- (2) Based on the lessons of the nuclear accident at the Fukushima nuclear power plant, the basic disaster management plan revised in January 2014 requires that nuclear facility employers maintain close relationships with the related government agencies in dispatching and introducing medical staff using a "network of medical doctors familiar with emergency medical treatment" (hereafter simply referred to as "Network").
- (3) To meet this requirement, a renewed Network that can immediately respond to accidents at

nuclear facilities throughout Japan needs to be established.

- (4) The provisions of a nuclear disaster prevention manual related to this are as follows:
 - A. A medical treatment team will be requested to be sent and carry out medical activities at a destination designated by a local medical group if there is a high possibility that a municipality will evacuate the residents. Sending such a medical team into a nuclear facility is not expected.
 - B. The local medical team (including the MHLW) will cooperate in sending and introducing medical staff for medical treatment in a nuclear facility.
- (5) The basic disaster management plan calls on the Nuclear Regulation Authority to provide education to medical institutions that accept victims of contamination or radiation. However, the plan does not consider development and training of medical staff who will be sent into a nuclear facility following an accident to assess the radiation exposure dose of victims of occupational injury and disease during emergency work, decontaminate those victims, save their lives, stabilize their vital signs, and provide initial treatment for complications, triage, mental support, and labor health management.
- (6) Because the basic disaster management plan stipulates that the central and local governments and nuclear facility employers “jointly provide disaster prevention drill, taking into consideration participation by the residents”, cooperation between the inside and outside of a nuclear facility and training on taking occupational injury and disease victims to medical institutions is insufficient at some nuclear facilities.

2 Response to issues

1. Current status at nuclear facilities

- (1) Cooperation with local medical staff
 - A. Training of medical staff who will be sent to a nuclear power facility in case of an emergency
 - No nuclear facility employer has yet carried out training of such medical staff on the assumption of dispatching. .
 - B. Holding a council to reinforce cooperation between the inside and outside of a nuclear facility
 - A liaison council with local medical institutions is held at almost all nuclear power plants. There are many cases where the municipality serves as the secretariat, but there are also cases where a public utility corporation acts as the secretariat.
 - C. Training of taking occupational injury and disease victims to medical institutions
 - Disaster prevention drills are conducted by nuclear power plants in all prefectures,

but training on how to take contamination victims to medical institutions differs between plants.

D. Securing perpetuation of council organization

- All nuclear power plants have concluded a memorandum with medical institutions on accepting victims of contamination.

(2) Medical facility and system at nuclear facilities

A. Medical facility

- All nuclear power plants have a medical examination room or an emergency medical treatment room, and a decontamination room is located near the exit of a controlled access area at most plants.

B. Medical staff

① Medical doctors (full-time and part-time)

- Five nuclear power plants have a full-time doctor. The other plants have a part-time doctor.

② Other staff (full-time and part-time)

- All power plants have a full-time nurse or a public health nurse.

C. Situation of training

① Situation of involvement of in-house medical staff

- Full-time medical staff is provided with training at all power plants.

② Do medical institutions accept contamination victims during transportation training?

- Medical institutions that concluded agreements with nuclear power plants implement training of taking victims of radioactive contamination to their institutions.

(3) Issues

A. Medical facilities

① A decontamination room is set up to cope with radioactive contamination resulting from ordinary work in a controlled access area and is not close to a medical examination room or an emergency medical treatment room.

② The medical examination room provides medical treatment such as for flu and stomach ache and does not have equipment and facilities to provide emergency treatment in most cases.

③ An emergency medical treatment room and equipment that can provide temporary medical treatment must be set up at a safe place protected from radiation even in the event of a nuclear accident.

(4) Basic concept of response

A. An emergency medical treatment room, to which medical materials and equipment for

treatment can be delivered if an accident occurs, needs to be created in a building sufficiently distant from a nuclear reactor to ensure safety and protection from radiation after the accident.

- B. The location where an emergency medical treatment room is set up should satisfy the following conditions:
 - ① It should be equipped with ventilation equipment and double doors to prevent inflow of radioactive substances.
 - ② It should have an anteroom equipped with hot water showers and capable of decontaminating victims of radioactive contamination.
 - ③ It should have air conditioning equipment and allow its users to use water and electricity.
 - ④ Radioactive contaminants and excretions should be able to be recovered from it.
- C. In procuring and putting in order necessary medical material, equipment, and facilities, those that should be delivered after an accident should be identified, prepared, and acquired, after considering the opinions of medical specialists.

2. Recruiting and developing registered medical staff members, etc. who are dispatched to a nuclear facility in case of an emergency

(1) Issues

A. Required human resources

- ① Not only human resources that can provide emergency medical care are needed, but also those that can handle labor health management and industrial health according to the situation of emergency work for the prevention of accidents.
- ② Not only medical doctors but also medical staffs, including paramedics, nurses, medical radiology technicians, and public health nurses are needed, with human resources taking charge of radiation management and logistics (hereafter all mentioned staff are collectively referred to as “medical staff members, etc.”).

B. Response in nuclear facility

- ① First-aid treatment, initial diagnosis of complications and injuries, judgment on severity, giving priorities to victims to be transported to medical institutions, selection of medical institutions to which the victims will be taken, initial assessment of radiation exposure dose of individuals, decision on whether victims have been contaminated, initial judgment of degree of contamination, and decontamination need to be carried out.
- ② The types of illness and injuries to be treated are expected to include external injuries resulting from such events as falling, and diseases such as heat stroke and myocardial infarction.

- ③ Mental support and healthcare to prevent heat stroke should also be provided depending on the situation of the emergency work.
- C. Items of education necessary for medical staff members, etc.
 - ① Understanding of the mechanism of nuclear facilities and scenarios of severe accidents.
 - ② Understanding a nuclear disaster prevention system, such as a local disaster management plan, in case a disaster occurs at a nuclear facility.
- (2) Basic concept of response
 - A. Medical staff members, etc., who are expected to be sent to a nuclear facility during emergency work where an accident occurs will be recruited and trained.
 - B. Medical staff members, etc., will be sent from a region other than the area stricken by the nuclear disaster. This is because medical institutions in the immediate area are expected to decrease in capability of providing medical care and treatment because they will be pressed with responding to the disaster, including to the general public.
 - C. Medical staff members, etc. to be sent to a disaster-stricken area will be required to undergo training several times, including on-site training, and periodically attend seminars to maintain their qualification.
- (3) Required knowledge and skill
 - A. Knowledge and skill in emergency medical care and disaster medicine
 - B. Medical needs during emergency work
 - C. Radiation and its biological effect
 - D. Method of assessing radiation exposure dose of individuals (including knowledge of handling radiation-measuring instrument)
 - E. Knowledge and skill in radiation protection (especially in handling protective clothes and mask)
 - F. Decontamination of the contaminated patient
 - G. Measures to prevent spread of contamination (emergency medical treatment room and ensuring the line of traffic of patients)
 - H. Triage (body and radiation), judgment on severity and urgency, and selection of medical institutions to transport patients to
 - I. Prevention of internal exposure and administration of therapeutic medication (e.g. stabilized iodine tablet, Prussian blue, and diethylene triamine pentaacetic acid (DTPA))
 - J. Structure of the nuclear facility, on-site emergency system and medical equipment and facilities, and line of traffic for emergency evacuation.
 - K. Mental health care and labor health management for emergency workers
- (4) Response toward recruitment and training of medical staff members, etc.

- A. Medical staff members, etc., will likely be recruited from related organizations such as hospitals by administrative organizations.
 - ① Those who satisfy specific conditions for registration, such as the number of years of experience, should be recruited.
 - B. Conditions for participation such as attending introductory and follow-up seminars should be imposed.
 - ① Lecturers should be chosen according to the content and detailed methods of the required seminars.
 - ② Seminars to train medical staff members, etc., and follow-up seminars should be provided by organizations with expertise in medical treatment of exposure victims and experience in conducting similar seminars.
3. Forming a council to support the transportation of patients from inside and outside of a nuclear facility and admission of those patients by medical institutions
- (1) Issues
 - A. Coordination with the regional medical care system varies from one nuclear facility to another. Medical response can not be carried out at a nuclear facility without backup by the regional medical care system.
 - B. The regional nuclear prevention plan differs depending on the municipality. Thus, how to transmit information if there are sick or wounded people needs to be considered.
 - C. Some nuclear facilities may have several organizations within a council overseeing medical treatment for radiation exposure. Council organizations led by municipalities are in the direction toward specializing in treatment of the local residents.
 - (2) Basic concept of response
 - A. There are already several liaison councils and networks thanks to projects by other ministries and agencies. Such a council organization should discuss the response specializing in carrying patients from nuclear facilities and selecting medical institutions that accept those patients.
 - B. Such a council may join an existing council organization.
 - C. A mechanism that can sustain the council even if the person in charge is changed is necessary.
 - D. The council must be consistent with the local disaster management plan or a plan of the local government.
 - E. Wide-area coordination that extends over the boundaries of prefectures must be established.
 - (3) Response toward starting up a council organization
 - A. The network secretariat should make an effort toward starting up a council organization

(hereafter referred to as a “local liaison council”). This should comprise local medical institutions; health, medical and fire departments of the municipality; and the prefectural labour bureau in cooperation with the nuclear facility employer.

- B. Whether such a local liaison council is added to an existing organization or exists as a new organization should be decided by the network secretariat in light of the actual situation of the nuclear facility.

4. Activities such as transporting occupational injury and disease accident victims to medical institutions

(1) Issues

A. Geographical scope of training

- ① Training for gathering and transporting should be conducted while maintaining coordination over a wide range spanning the boundaries of prefectures.

B. Training scenarios

- ① The present training is aimed at responding to ordinary occupational injury and disease accidents such as injuries and natural disasters. However, training for responding to many sick and wounded people based on a scenario of severe accident is also necessary.
- ② In many cases, the scenario of training for carrying victims to medical institutions assumes that an ambulance comes to the front gate of a nuclear facility. However, in the event of a severe accident, an evacuation zone will be set up, making it hard to predict how close an ambulance can get to a nuclear facility. Depending on the situation, therefore, a scenario in which victims are transported to an intermediate point by a nuclear facility employer from which they are carried by an ambulance to hospitals needs to be studied.

C. Trainees

Training must also be provided to staff who can rescue and transport patients in a nuclear facility.

(2) Basic concept of response

- A. Training will focus on transportation of the sick and wounded with contamination from a nuclear facility to medical institutions and on admission by the medical institutions.
- B. Medical staff members, etc., dispatched from outside the prefecture to the nuclear facility will also take part in the training.
- C. Training for carrying the victims not only to local medical institutions but also to institutions that can provide advanced medical treatment for radiation exposure will be conducted.
- D. A training scenario stricter than the present will be forged to cope with severe accidents.

(3) Response toward conducting training

- A. The network secretariat should make an effort toward providing the training by making adjustments with the local liaison council.
- B. The network secretariat should make a decision in accordance with the actual situation of the nuclear facility on whether existing training should be expanded or new training be provided.
- C. Whether wide-range coordination training that spans the boundaries of prefectures should be conducted along with a comprehensive nuclear disaster prevention training sponsored by the central government should also be studied.

5. Contract and guarantee of status of medical staff members, etc.

(1) Issues

- A. Appropriate conditions of contract and guarantee of status should be presented to the medical staff members, etc., to be dispatched.
- B. Exposure dose control and insurance, etc., against injuries stemming from an accident should be clearly explained to the medical staff members, etc.
- C. Understanding and contracts, etc., between parties concerned are necessary in advance for smooth dispatch.
 - ① Obtaining understanding of the dispatching medical institution about dispatch of medical staff members, etc.
 - ② Putting in order the relationships between the network secretariat and medical staff members, etc. to be dispatched.
 - ③ Agreement, etc., between the medical staff members, etc., to be dispatched and the nuclear facility they will be sent to.
- D. The procedure for dispatching medical staff members, etc., when an accident occurs must be clear.

(2) Basic concept of response

- A. The nuclear facility employer should be responsible for radiation protection and guaranteeing the status (reward, insurance, etc.) of medical staff members, etc., dispatched to the nuclear facility.
- B. The network secretariat should register medical staff members, etc., to a list of dispatch candidates in advance.
- C. The network secretariat should in advance provide information to and obtain understanding of dispatching from a medical institution to which the medical staff members, etc., to be dispatched belong. This will ensure their dispatch without problems.
- D. As a dispatching procedure, the network secretariat directly requests the medical staff

members, etc., registered to the dispatch candidate list to stand by or be sent, according to the request of the nuclear facility employer.

(3) Response toward concluding a contract with and guaranteeing the status of medical staff members, etc.

- A. Templates of contracts to be concluded between a nuclear facility employer and medical staff members, etc., to be dispatched should be prepared.
- B. Material with which the network secretariat will provide explanation to medical institutions should be prepared.
- C. The details of the mechanism of the dispatching procedure should be studied.

6. Securing methods of operating and sustaining the network to cover nuclear facilities throughout Japan

(1) Issues

- A. The organization system of the network needs to be made clear. A decision-making body in which the related authorities, nuclear facility employers, and experts, as well as the secretariat, can participate is necessary.
- B. Training should be continuously provided to those medical staff members, etc., registered to the network.
- C. How the network should be involved in local liaison councils and the training they provide should be studied.
- D. Existing techniques, skills, human resources, and equipment and materials concerning medical treatment for victims of exposure should be used.

(2) Basic concept of response

- A. A mechanism to accurately track down the contact addresses of medical staff members, etc., is necessary because they are frequently transferred.
- B. The network should be operated by a public body so that medical staff members, etc., can be engaged in accident response as an official duty. In addition, existing techniques, skills, human resources, and equipment and materials concerning medical treatment for victims of exposure should be used.

(3) Office work to be performed by the network operator

- A. Continuous management of a list of medical staff members, etc.
- B. Arrangements for maintaining the skills of medical staff members, etc., and management of records of their participation in seminars
- C. Adjustments concerning local liaison councils
- D. Adjustments with related organizations over transportation training, etc.
- E. Identifying contact for communication with the nuclear facility employer (management of name list)

- F. Study of basic policy of content of seminars
- G. Other office work related to maintenance of the network
- H. The following elements of the organization of the network should be considered:
 - ① Secretariat
 - Comprises coordinators and clerks.
 - Set up a working group of experts as necessary.
 - ② Operating council
 - Comprises the related ministries and agencies, nuclear facility employers, as well as the MHLW.
 - ③ Medical staff members, etc., to be dispatched (those registered to a list)
- (4) Response toward organizing a network operator
 - A. The network operator should be a public body. Existing techniques, human resources, and equipment and materials should be used for operating the network.
 - B. Office work to be performed by the network operator should also be studied when work in (3) above is studied.

7. Future procedures

- (1) A model project with the subject limited by commission will be carried out in 2015 based on the conclusion of the study meeting. The problems for actual implementation will be put in order and measures will be reviewed using this model.
- (2) Starting from 2016, a project intended for all nuclear facilities will be launched based on the result of the model project and partial use of subsidies to cover expenses for the project will be studied based on the responsibility of the employer.

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Development of hearing

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