Advisory Opinion

Toward Improved Management for Occupational Radiation Exposure of Health Care Workers

19 September 2023

Science Council of Japan

Subcommittee on Radiology, Laboratory Medicine, and Pathology, Committee on Clinical Medicine, Science Council

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Toward Improved Management for Occupational Radiation Exposure of Health Care Workers

1. Rationale for this Statement

In medicine, various examinations and treatments are performed using radiation, and radiological practice contributes significantly to public health. However, the possibility of detrimental effects due to radiation exposure must be taken into consideration. In addition to medical exposure to patients, occupational exposure may occur to healthcare workers who perform or assist in radiological practice. Although safety management for occupational exposure is stipulated by law, there are challenges to compliance in medical settings, and some physicians receive high-dose radiation. To maintain and further develop high-level medical services in Japan, it is necessary to assure the safety of healthcare workers against radiation while continuing provision of radiological services.

This opinion reports the current status and challenges in radiation safety management concerning occupational exposure to healthcare workers, presents the issues for improvement based on actual situations in medical settings, and propose specific measures that are recommened to be realized at an early stage.

2. Current Status and Challenges

Radiation management for health care workers is stipulated mainly by the legal systems related to the following laws and regulation: Act on Radioactive Isotopes Management Law (RI Act), Medical Care Act, and Regulation on Prevention of Ionizing Radiation Hazards. In cases where the Act on Radioactive Isotopes Management Law is applied, radiation management is supervised by a radiation protection supervisor in accordance with the radiation hazards prevention program of each facility. The facility conducts health surveillance and provides education and training before engagement and then periodically. Personal radiation doses are measured to confirm that the dose limits are not exceeded. However, for X-ray examinations, etc. to which the RI Act is not applied, there are no laws and regulations to mandate comprehensive internal rules, supervisors, and periodic education.

Some healthcare workers receive high-dose radiation due to occupational exposure and may exceed dose limits; physicians who provide highly specialized practice are particularly prone to high-dose exposure. Insufficient placement of radiation protection devices by the facility and their insufficient utilization by the physicians are relalated to high-dose exposure. Furthermore, personal dosimeters to measure radiation dose for individual workers are not necessarily worn, and it is assumed that the actual doses are higher than indicated in the

measurement results. Even when problems such as high-dose exposure and non-wearing dosimeters are noticed, actions to solve the problems are not adequately taken. The subjects of radiation management are not clearly defined, and some workers are engaged in radiological practice without specific radiation management. In other fields, including the nuclear power field, radiation doses received in two or more facilities are summed up, and the cumulative doses are managed centrally; however, there is no such system in the medical field.

One of the backgrounds of the problems in radiation management in medical settings is the tendency for the provision of medical care to patients to be prioritized over the occupational safety of physicians. Whereas many healthcare workers, in addition to many patients, enter the radiology rooms, occupational exposure matters for a few of them; strict radiation management is difficult, and awareness of management tends to be weak. The requirements for radiation management stipulated by multiple laws and regulations, etc. are not adequately recognized or disseminated in medical facilities. The responsibilities and authorities of those in charge of radiation management are not clearly defined; even if some problems are recognized, it is difficult to improve them.. Insufficient knowledge of healthcare workers leads to inadequate measures for radiation safety. The costs associated with personal dosimetry and radiation protection devices also increase the burden of radiation management.

3. Contents of the Advisory Opinion

(1) Establishment of a radiation management organization in a medical facility

Medical facilities that provide radiological services should assign a person comprehensively responsible for radiation management. The person should perform matters required for the radiation safety of healthcare workers under the head of the facility in cooperation with the internal occupational safety organization, and the responsibilities and authorities of the person should be specified and disseminated in the facility. The government is expected to stipulate that such a radiation management system should be established in each medical facility and to confirm the status of realization through audits, etc.

(2) Establishment of internal rules for radiation safety management in a medical facility

Medical facilities should establish internal rules for radiation safety management and comprehensively define matters related to radiation safety for healthcare workers. Such rules should state the issues concerning the person responsible for radiation management, radiation workers, temporary visitors to radiation-controlled zones, items to be observed in the controlled zones, dosimetry and dose management, education and training, health surveillance, etc. It is expected for the government to establish a guideline for formulating

the internal rules and for relevant academic societies, etc. to provide examples and guidance based on the governmental guideline. Furthermore, the administrative agencies are expected to confirm the contents of the internal rules of each facility through audits or notifications and to provide necessary instructions.

(3) Improving education for radiation safety

Each medical facility should provide education required for radiation safety to those engaged in radiation work to familiarize them with general knowledge of radiation effects and protection, safe handling of radiation sources, and related laws and regulations as well as internal rules. Periodic education after engagement in radiological practice should be provided in addition to prior education. Moreover, it is expected for the person responsible for radiation management to attend training courses offered by relevant academic societies, etc.; for the administrative agencies to ensure appropriate education through audits, etc.; and for the relevant academic societies, etc. to support the implementation of education in medical facilities.

(4) Improving personal dose management for occupational exposure

Each medical facility should disseminate the significance and methods of personal dosimetry in the facility and establish a system to ensure the implementation of dosimetry. The policy for dealing with persons exposed to high-dose radiation should be clearly stated in the internal rules for radiation safety management, and appropriate actions by the person responsible for radiation management should be surely taken. The administrative agencies are expected to confirm that each facility has established a system to deal with high-dose exposure through conducting appropriate dosimetry.