

Prehospital Emergency Preparedness in Radiological and Nuclear Incidents: Letter to the Editor

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Among all types of natural and man-made emergencies and disasters, RN incidents, despite their relatively low probability of occurrence, can have severe, widespread, and long-term consequences (1). The widespread use of nuclear and radioactive materials in various fields has increased the likelihood of unwanted incidents. Moreover, there is a risk of terrorist use of these materials. Given the potential consequences of such incidents and the need for measures beyond those taken in normal incidents, preparedness in dealing with them is particularly important.

The priority in the event of any incident is to save human lives and ensure the health of the victims. EMS plays a vital role in saving people's lives by providing immediate medical care before transferring patients to medical facilities. Effective

and timely management, especially in the rapid referral of trauma patients, can prevent secondary injuries and improve their clinical condition during the transfer process (2, 3). Considering the position of the front line of EMS in the health system, the preparedness of this system to respond to RN incidents plays an essential role in reducing casualties, and strengthening public trust in the face of such incidents (4).

Despite the high importance of EMS preparedness in the face of RN incidents, there is still insufficient readiness in various aspects of this system, including structure, staffing, and equipment. Therefore, the response structure to these incidents should be explicitly included in disaster preparedness plans. Although plans, protocols, and instructions are compiled and communicated to subordinate units, it is necessary to include the special conditions of each region based on risk assessments. As necessary, preparedness and emergency response procedures should be updated to reflect recent experiences of other countries or lessons learned from training exercises (5). Also, due to the infrequency of these types of incidents, the easy access, summarization, and enforceability of guidelines are often ignored. Paying attention to this issue can save response time and prevent employee confusion.

Due to the high prevalence of other types of incidents and the focus of EMS, the necessary training and exercises regarding RN incidents are not carried out sufficiently. In order to effectively respond to them, EMS staff must have the necessary knowledge and skills - both technical and non-technical. In addition to mastering their specialized duties, prehospital emergency team members must

have the ability to collaborate effectively in multi-institutional teams and inter-organizational performance while ensuring the safety of themselves, patients and other people on the scene. The formation of specialized response teams in RN emergencies is one of the key tasks of health system managers, which aims to improve the operational capacity and increase the readiness of the EMS organization. In this regard, designing the appropriate team structure is the first and most important step in the effective formation of these teams (4).

Providing the equipment needed to deal with RN incidents faces significant challenges due to high costs and resource limitations. In many cases, adequate and appropriate equipment for radiation monitoring, decontamination, treatment, patient transport, and personal protection is unavailable. In addition, the lack of specialized training among staff on properly using this equipment can waste time and vital resources when an incident occurs. Therefore, all levels of EMS response teams must be equipped with basic equipment such as radiation monitoring devices, first aid kits, drugs needed to treat radiation syndrome, decontamination equipment, and personal protective equipment (6), access to specialized equipment, including Geiger-Muller detectors, clinical sampling devices, personal dosimeters, Global Positioning System (GPS), and communication tools such as telephone, wireless, and satellite communication systems (4).

It should be noted that worry and anxiety in the face of RN incidents can have a significant negative impact on the performance of emergency workers. Preventive psychological support should be planned and implemented before the incidents. Also, prior coordination between the responding organizations is essential due to these incidents' sensitive and security nature and related public concerns. Unfortunately, many of these organizations do not have enough cooperation and interaction before the incident, and their participation will provide an important opportunity to create efficient and synergistic networks (7, 8). In addition, designing and implementing coherent and transparent communication plans to interact with the public and the media plays a key role in the management of

these incidents (9).

EMS preparedness is essential for maintaining community health and effective disaster management. Therefore, addressing RN incidents at the macro policy level is crucial for enhancing preparedness at operational levels. Based on this, it is essential to develop comprehensive plans that cover all the components of preparedness. EMS units should also be required to conduct regular training and exercises by these plans, collaborate with other relevant organizations, and report on the actions taken. These measures enhance employee knowledge and skills, reducing anxiety about RN incidents. It is important to utilize the capacity of other organizations and the private sector to provide essential EMS equipment. Before taking any action, a detailed risk assessment of RN incidents in various regions should be done. Training programs and equipment provision can be designed and implemented effectively.

A thorough understanding of the various dimensions and factors influencing EMS preparedness in response to RN incidents is crucial. This includes adapting organizational structures, implementing targeted staff training, and providing adequate and specialized equipment. These elements significantly enhance the quality and effectiveness of emergency responses. Furthermore, since managing such incidents requires the collaboration of multiple organizations, the active involvement of relevant institutions in developing preparedness plans, conducting inter-agency training, and participating in joint exercises can improve coordination and effectiveness in response operations. Scene management, medical and non-medical aspects of the accident, required resources, and training are among the issues for which careful planning ensures optimal preparedness in these incidents (10).

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Code of ethics

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Authors' contributions

All authors met the necessary authorship criteria

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