

НАЦИОНАЛЕН ЦЕНТЪР ПО ОБЩЕСТВЕНО ЗДРАВЕ И АНАЛИЗИ	
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OPINION

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**OF DISSERTATION WORK ON A TOPIC
"ORGANIZATION AND MANAGEMENT OF ELIMINATION OF THE
CONSEQUENCES OF RADIATION INFECTION OF THE
POPULATION AS A RESULT OF A TERRORIST ACT AND OTHER
RADIATION INCIDENTS**

For obtaining an **PhD degree**
Professional field 7.1. Medicine
Scientific specialty - Social Medicine and Health Management
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Relevance of the problem

The problems of the current global state of nuclear disasters and natural disasters are extremely serious and require good preparation to deal with the consequences of the damages caused by them.

Given the growing danger of a terrorist act using radioactive materials, the development and implementation of an algorithm for organizing and managing the elimination of the consequences of radiation contamination is particularly relevant. In this regard, the main motive in the dissertation of Dr. Radinoff is to fill a gap in the knowledge of the organizational behavior of specialists involved in eliminating the consequences of radiation contamination in large groups of people as a result of a terrorist act and/or other radiation incidents.

Structure and design

The dissertation on this topic is written on 168 pages and is structured according to the rules adopted in our country. Seven main chapters are proposed, which include: introduction, literature review, purpose, tasks, materials and

methods, results and discussion, conclusions, recommendations, contributions and conclusion, appendices and bibliography.

Literature review

The literature review focuses on the most important theoretical problems and the results published so far, directly related to the goal and objectives that the dissertation sets for its development. It is presented on 66 pages, and is exceptionally analytical, with a critical attitude of the author on all issues. They are discussed in the framework of history, where in chronological terms are given the accidents around the world so far, as well as the organization for the elimination of their consequences, combined with the provision of medical care to the victims. The acquaintance with the actions in case of nuclear catastrophes in the world is the basis for the construction of an algorithm for organization and management of the consequences of radiation contamination, in particular in the case of a terrorist act. The exceptional role of medical physicists in a radiation incident is taken into account, which includes determining the degree of radiological contamination, orienting medical staff to the degree of contamination, guiding staff for decontamination of patients and of the equipment. The means and organization of action in case of radiological incidents in the USA and Belgium, the Chernobyl nuclear accident were subsequently presented. The protection of the population from radiation exposure is discussed in a report of the ICRP (International Commission on Radiation Protection). It sets out an algorithm for action in emergency situations of radiation and recommendations for decontamination and subsequent treatment of victims. It matters also the experience of dealing with the radiation damage caused by the accident at the Fukushima nuclear reactor, where the leading role in this situation is taken by the Fukushima Medical University in rescuing the population.

Special emphasis is placed on the consideration of terrorist acts, their characteristics, and the interaction of individual state bodies for synchronization. An important role in the fight to eliminate the effects of radiation pollution is assigned to medical professionals. The medical characteristics of the disease after nuclear terrorism are presented as an acute radiation syndrome, as a result of which hematopoietic, gastrointestinal, cerebrovascular and skin syndromes develop. Timely diagnosis and treatment of these syndromes are the basis of the positive therapeutic effect. The psychological manifestations as a consequence of radiation exposure, methods of examination in case of possible infection, biological dosimetry, triage and emergency care are considered.

The PhD candidate places special emphasis on the medical behavior in case of the hematopoietic syndrome, suggests methods of treatment and focuses on cytokine therapy, transfusion of cellular components (erythrocyte and platelet concentrates) and plasma in those affected by radiation with bone marrow damage. Stem cell transplantation is presented as a final measure. Maintenance treatment includes the measures against infections, gastrointestinal symptoms, hematopoietic pathology. In the fight against infections, the grounds for the use of antibiotics and other antimicrobial agents have been considered. Guidelines for therapeutic behavior in pregnant women and prevention of thyroid cancer are given.

The dissertation did the right thing by emphasizing mass psychosis in a situation of radiation contamination of the population as a result of a terrorist act and other radiation incidents. Considering the world trends in this direction, an organization and algorithm of behavior in case of psychological disorders is proposed. Mental recovery can be a long process and strictly individual for individuals. In every accident or disaster there are always individual reactions from the victims and witnesses of the accident, for which a separate psychoprophylactic technique is required. Basic principles are offered in helping the elderly and children.

The review part of the dissertation concludes with an analysis of the problems related to radiation contamination of the population as a result of a terrorist act and other radiation incidents and finally synthesizes the unsolved so far problems.

Aim and tasks of the dissertation

From the summary of the literature data at the end of the literature review, the aim and tasks of the present work are logically derived, namely to create an algorithm of organizational behavior of specialists engaged in providing first aid to the population in case of nuclear pollution.

To achieve this goal, five tasks are formulated, according to the aim of the dissertation.

Material and methods

The material and methods that are applied are consistent with all modern scientific technologies. Of particular importance is the formation of interdisciplinarity in the dissertation.

The object of the study is the organization and management of work processes, mainly in pre-hospital care, of a large number of people who have suffered from nuclear pollution, as a result of which the hematopoietic system is damaged. The range includes all damage caused by radiation, regardless of the nature of the radiation source.

The research is aimed at a survey to assess the readiness of doctors working in hospitals to provide first aid to the population in the event of radioactive contamination as a result of a terrorist act and other radiation incidents. The survey questionnaire contains 16 questions and was conducted in a 109 doctors with a specialty involving their inclusion in first aid teams for victims - 28 hematologists, 25 surgeons, 25 GPs and 31 oncologists. The results are presented in tabular and graphical form.

Taking into account the injuries to the population in massive nuclear accidents and the need for emergency assistance to the victims, the overall algorithm for the organization and management of work processes in the Department of Hematology at the University Hospital "St. Ivan Rilski" has been developed.

Results and discussion

The results of the study show that the surveyed physicians do not consider that there is a particular risk for them in providing first aid to radioactively contaminated persons. After preliminary treatment, the victims are referred to a hospital, where the main treatment is carried out. 71% of hematologists believe that they are not able to carry out initial treatment of victims of radiation infection. Many colleagues believe that their knowledge of how to deal with nuclear terrorism is insufficient. A high percentage of surveyed doctors do not know who to turn to in case of radiation pollution. The surveyed doctors state that they do not have a full range of medications for pre-treatment of the victims. They unanimously agree that additional training is needed on the topic under discussion. The readiness for action in general in the event of radiation terrorism and other radiation incidents is low. All unanimously accept the need for an algorithm for action in case of radiation contamination and natural disasters. The training of the medical staff and their psychological state is of particular importance. National legislation in this area is also important.

The developed national plan for disasters and accidents indicates the possible organization of the measures, as well as the structures and institutions engaged in the elimination of the consequences of radiation pollution. Not all

aspects of the possible problems that have arisen have been fully clarified, such as the question of the resources that will be needed for provision of medical care to the victims of ionizing radiation. The hierarchical structure envisaged according to the national action plan for the management of the processes for liquidation of the consequences of radioactive contamination has all reasons for success, in case of a small number of victims. The envisaged Center for Radiation Injuries, located on the territory of the Military Medical Academy-Sofia, cannot provide medical provision to more than 100 patients.

Given the need for emergency assistance to victims of massive radioactive contamination, in which there is a disturbance of hematopoiesis, the doctoral candidate presents an algorithm of therapeutic behavior in the Department of Hematology of St. Ivan Rilski University Hospital, Sofia, which has 55 beds and is located territorially close to the Military Medical Academy.

In general, patients are subject to decontamination, and the assessment of the severity of infection is subject to a triage. Upon admission to the medical institution, the health condition is assessed and it is stabilized as a matter of urgency. An initial assessment of radioactive contamination, decontamination of wounds and assessment of internal contamination is performed. Subsequently, a procedure for external decontamination, treatment of contaminated wounds, decontamination of body openings and cavities is presented. Of particular importance is the psychological support and action plan to provide assistance to the population as a result of radiation contamination caused by a terrorist act or radiation incident. Complex psychological help from psychiatrists, psychotherapists and psychologists has to be provided. The basic principles of the organization of psychological help by psychiatrists, psychotherapists and psychologists include: accessibility, timeliness and continuity.

Conclusion

Based on his own work, Dr. Radinoff has formulated 10 main conclusions. They are well argued and reflect the main merits of the dissertation.

Scientific contributions

A detailed analytical review has been made, summarizing the information available in the literature on an extremely important and topical issue.

An original model (algorithm) has been created for the organizational behavior of the specialists engaged in providing first aid to people affected by nuclear pollution.

Useful conclusions and recommendations have been formulated for the specialists engaged in the diagnosis and treatment of victims with disorders in the functioning of hematopoiesis caused by nuclear contamination.

An original methodology for research and obtaining new scientific results in an important area for social practice has been created.

Recommendations

I assume that in the period of elaboration of the dissertation work Dr. Radinoff got acquainted with quite unresolved problems in connection with the organization and management of the consequences of radiation contamination, from which the following recommendations are formulated:

The conducted research on this global problem requires collaboration between the individual governmental structures for cooperation in the event of relevant accidents and disasters, as well as it requires timely updating of the regulatory framework.

It is necessary to prepare the population in peacetime for personal and collective protection.

It is necessary to constantly optimize the technologies, as well as the knowledge of the relevant specialists engaged in specific tasks and actions in the event of nuclear accidents and disasters.

Dissertation summary

The dissertation summary is designed according to the requirements and reflects the main sections of the dissertation work and their interpretation.

Conclusion

The dissertation of Dr. Radinoff has been developed in accordance with the requirements of the Law for Development of the Academic Staff in the Republic of Bulgaria, Regulations for the Application of the Law for Development of the Academic Staff in the Republic of Bulgaria, and the Regulations on the Terms and Conditions for Acquiring Scientific Degrees and Holding Academic Positions in the NCPHA, as a design, implementation and clinical and practical significance.

The problem posed for development is topical - organization and management of the liquidation of the consequences of radiation contamination of the population as a result of a terrorist act and other radiation incidents. The implementation of the set aim and tasks were carried out with modern methods,

the obtained results lead to significant conclusions and contributions. The main parts of the research presented in the dissertation are published in the periodical medical press or presented at medical forums. The dissertation is characterized by practical orientation, contains potential and ideas for future research and this increases its positive assessment.

Having in mind the topicality and innovative nature of the topic, the good staging of the research, the significance of the results in theoretical and practical terms, I propose to the members of the esteemed jury at NCPHA to award PhD Degree to Dr. Atanas Radinoff Radinoff .

Date: 06.01.2021

Signature:



/Prof. D.Vassileva, MD, PhD/