

REVIEW

BY ASSOC. PROF. GALIA KRUMOVA TSOLOVA, MD, PHD

Member of the Scientific Jury in the procedure for defending the dissertation on the topic:

**ORGANIZATION AND MANAGEMENT OF THE ELIMINATION OF THE
CONSEQUENCES FROM RADIO INFECTION OF THE POPULATION AS A RESULT OF
A TERRORIST ACT AND OTHER RADIATION INCIDENTS**

for acquiring the educational and scientific degree "Doctor" in the scientific specialty
"Social Medicine and Health Management"

with doctoral candidate **Dr. ATANAS RADINOV RADINOV**

On the basis of order №RD-493/16.12.2020 of the Director of NCPHA and by decision of the Scientific Jury (Protocol № 1/18.12.2020) I was elected a member of the Scientific Jury according to the specified procedure and preparation of a review. The review was prepared in accordance with the requirements of the Act on Development of the Academic Staff in the Republic of Bulgaria (ADASRB) and the Regulations on the terms and conditions for acquiring scientific degrees and holding academic positions in National Center of Public Health and Analyses (NCPHA).

1. General Overview of the procedure and PhD candidate

Having regard to the procedure, I was provided with a set of materials on paper and electronic media, which includes the required documents, as follows: dissertation; abstract; copies of scientific publications; list of publications and participation in scientific forums; other documents.

Dr. Atanas Radinov Radinov was enrolled as a doctoral student on a self-study basis by Order of the Director of NCPHA №RD-58 as of 03.02.12020 under a doctoral program: "Social Medicine and Health Management". The doctoral student has the required number of points, according to Annex 1. Minimum national requirements for scientific and teaching activities.

At the Scientific meeting of the Health Promotion and Disease Prevention Directorate, and based on a decision of the Scientific Council, the doctoral student was expelled with the right to defense, according to Order № RD-492/15.12.2020 of the Director of NCPHA.

The set of documents meets the requirements. The submitted documents prove the legality and completeness of the conducted training and the procedure for its administration.

2. Autobiographical details of the candidate

Atanas Radinov Radinov was born on February 25, 1962. In 1988 he graduated in medicine at the Higher Medical Institute in Varna. From 1989 to 1994 he specialized in "Internal Medicine", and from 1995-1997 "Clinical Hematology" at MU-Sofia. From 1989 to 1990 he worked as head of a medical center in a department - Pomorie, then until 1995 - as head of a laboratory of immunology at the Center for Immunology at the Military Medical Academy - Sofia. From 1995 to October 2003 he worked at the Clinic of Hematology, Chemotherapy and Oncology at the Military Medical Academy - Sofia, and since 2000 as a Chief Assistant. After a year of training in London, he started working in the IV Hospital, Sofia as a therapist and in the XXV DCC - as a hematologist. From 2006 to 2014 he worked first as head of the hematology department, and then as medical director of Tokuda Hospital, Sofia. Since December 2014, he has been Head of the Department of Hematology at the University General Hospital for Active Treatment "St. Ivan Rilski ", Sofia.

During the period 1992-2000, Dr. Radinov enhances his skills in a number of courses in the country and abroad with relevant sertifikat. Participates as a doctor of the Bulgarian contingent in the NATO - SFOR mission in Bosnia and Herzegovina and an international observer in the OSCE mission to Bosnia and Herzegovina and Kosovo.

3. Relevance of the development

The dissertation of Dr. Atanas Radinov focuses on an extremely important issue. The theoretical and methodological aspects of the occurrence of nuclear accidents and natural disasters are presented. They are particularly important because the experience of dealing with these disasters can be adapted in wartime.

The problems of the organization and management of medical care have been in the center of attention of the Bulgarian academic and professional community for a long time. Ideas, models and solutions are offered to increase their efficiency and methods and tools to be used. The recent increase in terrorist acts, including the use of radioactive materials, requires the development and implementation of an adequate approach to action in this situation.

Medical professionals involved in emergency care and treatment face a number of new challenges. The main among them is the lack of a common process model (algorithm) of

organizational behavior to ensure observability and manageability of the work processes of first aid to irradiated people. The absence of such an algorithm creates many opportunities for unsuccessful improvisations and incorrect actions, which in cases of emergency first aid leads to fatal consequences. All this emphasizes once again the relevance of the presented dissertation.

4. Essential dissertation characteristics

The dissertation is formed in accordance with the requirements of the Act on Development of the Academic Staff in the Republic of Bulgaria (ADASRB). The text is clear, well structured and there is an adequate balance between the different sections.

The development is presented on 170 pages and includes all the necessary elements: introduction, literature review, research methodology, discussion of the results, conclusions, recommendations. The bibliography includes 165 literary sources, of which 9 in Cyrillic and 156 in Latin. The work is illustrated with 8 tables, 38 figures, 2 annexes with a questionnaire for assessing the readiness of doctors working in hospitals to provide medical care in case of radiation infection of the population as a result of a terrorist act.

Literature review

The literature review is presented on 76 pages and shows the current trends on the problems related to disasters. The literature review presents historically the development of nuclear accidents and natural disasters; theoretical and methodological aspects of first aid in case of sudden disturbances in the functioning of the hematopoietic system of large groups of people caused by nuclear pollution; the medical characteristics of the disease, the methods for examination of possible infection, the medical behavior in the hematopoietic syndrome, the methods of treatment are described in detail.

Emphasis is placed on the role of medical physicists in a radiological incident and their training for adequate action in radiological terrorism. The problem of radiation protection during and after the accident at the Fukushima nuclear reactor, as well as the experience of the United States and Belgium in this direction, are discussed in detail. Particular attention is paid to psychological stress and its effect on sensitivity to ionizing radiation.

The medical characteristics of the diseases after nuclear terrorism are presented in a modern aspect. An algorithm in the management of radiation accidents, biological dosimetry and triage is given, which is extremely important. A good impression is made by the

consideration of the medical behavior in the hematopoietic syndrome, with an emphasis on cytokine therapy, transfusions of blood and blood products, stem cell transplantation.

The doctoral candidate focuses on the psychological reaction of people to radiation infection as a result of a terrorist act, which is extremely important in such situations. Mass psychosis is essential and combating it requires serious and consistent action.

The analysis made in the review shows the excellent awareness of the PhD candidate about the researched problem, including very good knowledge of the regulations; thus, he deserves respect and admiration. Dr. Radinov is able to work with scientific literature, to discuss different opinions, to make generalizations, for which his practical experience is essential.

The qualitative and well-structured literature review is the basis for the formulation of the goal: "To create an algorithm of organizational behavior of specialists engaged in first aid in sudden disorders of the hematopoietic system of large groups of people, which are caused by nuclear pollution." The tasks are 5 in number and are a consequence of the goal setting for the development of the dissertation.

Research methodology

The object, subject and scope of the study are presented correctly. The research methodology is formed taking into account its interdisciplinarity, which determines the use of a diverse set of methods and tools such as: observation, document analysis, expert evaluations, conducting structured interviews, case studies, extensive study of information sources and architectural approach.

The main source of information about the research are the personal observations of the author, his practical experience, acquaintance with the available documentation and the digital Web resource. The architectural modeling provides an objective basis for verification and validation of the created algorithm and verification of the working hypothesis in the conditions of a specific medical ward. On this basis, theoretical summaries, conclusions and recommendations are made, which have cognitive and reference value.

Results, conclusions and recommendations, contributions

The organization and management of emergency medical care in case of radiation contamination is presented. The own questionnaire survey presents an assessment of the readiness of doctors working in hospitals to provide medical care in case of radiation

contamination of the population as a result of a terrorist act. In its essence, such a study is innovative and with a significant scientific and practical contribution. A separate chapter presents a Model (algorithm) of organization and management of work processes in the Department of Hematology at the University Hospital "St. Ivan Rilski", Sofia in rendering first aid in case of sudden disturbances caused by nuclear pollution in the functioning of the hematopoietic system of large groups of people.

The proposed model could be applied in other medical institutions with hematology structures, which would allow for a much more adequate response of the Ministry of Health in cases of sudden disturbances in the functioning of the hematopoietic system of large groups of people caused by nuclear pollution as a result of a terrorist act. An important result of the dissertation is the presented plan for psychological support and action plan for providing assistance to the population due to radiation contamination, terrorist act and other radiation incidents. This algorithm, psychological support plan and action plan for providing medical care to the population can be used in other situations, such as epidemics.

The dissertation ends with the formulation of *10 conclusions*, which are a logical consequence of the goals and objectives, as well as the overall development of the dissertation. The obtained results have an original structured training content, which is applicable in the process of modeling and optimizing the organizational behavior of specialists engaged in first aid for sudden disorders of the hematopoietic system of large groups of people caused by nuclear pollution.

There are *5 recommendations* that provide a basis for future application in such disasters and which I support. The recommendations made should be communicated to the competent authorities for their practical application. The dissertation can be used by all public and private universities, where disciplines are taught, dealing with the organizational behavior of specialists engaged in first aid for sudden disorders of the hematopoietic system of large groups of people caused by nuclear pollution.

Personal involvement of the author

The author has personally participated in all stages of the study - planning, design, guidance, coordination and control in the collection of information, analysis and processing. The dissertation shows that Dr. Radinov has in-depth knowledge, professional and personal qualities for independent research activities. The work is written in stylistically good language, gives a complete picture of the work done.

Scientific publications on the dissertation

The doctoral student has 5 published articles in which he is a leading author in authoritative Bulgarian journals - *Bulgarian Journal of Public Health* and *Journal of Mechanical Engineering and Electrical Engineering*.

Abstract

The abstract fully reflects the achievements of the doctoral candidate, synthesizes the content of the dissertation and is fully compliant with the requirements of the Act on Development of the Academic Staff in the Republic of Bulgaria, the Regulations for its application and the Regulations on the terms and conditions for acquiring scientific degrees and holding academic positions in NCPHA.

CONCLUSION

I positively evaluate the presented dissertation. The reason for this is the practicability of the problem, the modern methodological approach used, the large volume of precisely performed and analyzed research work. The topic is undoubtedly extremely relevant, especially since there are isolated similar studies. The dissertation is characterized by scientific integrity and practical orientation. It contains potential and ideas for future research, which increases its value.

The dissertation fully meets the requirements of the Act on Development of the Academic Staff in the Republic of Bulgaria (ADASRB), the Regulations for the Application of the ADASRB and the Regulations on the terms and conditions for acquiring scientific degrees and holding academic positions in NCPHA and the scientific degree "Doctor" in the scientific specialty "Social Medicine and Health Management".

The above considerations give me reason to confidently suggest to the members of the esteemed Scientific Jury to highly appreciate the dissertation and to vote positively for the award of the educational and scientific degree "Doctor" to Dr. Atanas Radinov Radinov.

11.01.2021

Prepared by:

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