

*(Translation from Bulgarian)*

**EXPERT OPINION**  
ON A DISSERTATION PAPER  
FOR AWARDING A DOCTORAL DEGREE

**Topic: Perioperative Myocardial Infarction - Clinical, Diagnostic, and Therapeutic Features**

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**1. General presentation of the procedure and the doctoral candidate**

The set of materials and documents presented in electronic format by Dr. Ivan Martinov complies with the requirements of the Development of Academic Staff in the Republic of Bulgaria Act and the Regulations for its implementation, the Higher Education Act, and the Rules on the terms and conditions for acquiring a doctoral degree of N. I. Pirogov University Multi-Profile Hospital for Active Treatment and Emergency Medicine EAD.

## **2. Brief biographical data about the doctoral candidate**

Dr. Ivan Martinov was born in 1971 in Sofia. In 1995, he graduated from the Medical University of Sofia with a degree in Medicine. From 1997 to 2005, Dr. Martinov was a resident doctor at the Clinic of Emergency Internal Medicine of N. I. Pirogov University Multi-Profile Hospital for Active Treatment and Emergency Medicine EAD, Sofia; from 2005 to 2007, he was a research associate at the National Cardiology Hospital; from 2007 to 2011, he worked as a cardiologist at the Cardiology Department of Tokuda Hospital, Sofia; from 2011-2013, he worked as an invasive cardiologist at Hr. Botev MHAT, Vratsa. Since 2013, Dr. Martinov has been Head of the Invasive Department at the Cardiology Clinic of N. I. Pirogov University Multi-Profile Hospital for Active Treatment and Emergency Medicine EAD, where he still works.

Dr. Martinov acquired specialties in Internal Medicine in 2003, Cardiology in 2007, certificates in Interventional Cardiology in 2010 and Echocardiography in 2014, and a diploma in Health Management in 2016.

He took part in many training courses at home and abroad and is a member of the European Society of Cardiology.

From the data presented, it is clear that the doctoral candidate has the necessary competencies and skills for the successful preparation and completion of a dissertation paper on the topic, in the doctoral programme of Cardiology, professional field 7.1 Medicine, higher education field 7. Health and Sports.

## **3. Relevance of the topic and expediency of the goals and objectives set**

Undoubtedly, the topic of the dissertation paper is of relevance and concerns a medical issue of great clinical, prognostic, and social significance, i.e. perioperative STEMI. The interdisciplinary nature of the issue as well as the insufficient data of scientific literature determine the need to clarify the risk factors for the occurrence of perioperative acute coronary syndrome (PACS), its course, the specifics of

interventional treatment, and the prognosis of patients with ACS-STEMI occurring in hospitalized patients and directly connected with surgical interventions.

#### **4. Structure of the dissertation paper**

The dissertation paper and its abstract are well structured and meet the generally accepted criteria. The dissertation consists of 202 pages divided into 12 chapters. The individual sections are well balanced. The dissertation contains 43 figures and 41 tables, which are informative and clearly present the results of the study. The abstract is 87 pages long and presents the main data contained in the dissertation paper. A complete reading of the materials presented by the doctoral candidate shows a completed and competently written dissertation paper. The goal is specific, well-structured, corresponding to the issue studied. There are 7 tasks which are well structured and specifically focused on the goal set.

#### **5. Knowledge of the issue**

The literature review is presented on 76 pages and is well structured, modern, analytical, and containing a sufficient amount of information material. It comprehensively covers the knowledge on the topic so far. The doctoral candidate demonstrates competence in the problems related to the topic and the need to write the dissertation paper. The unsolved problems are analysed and indicated, the goal and tasks of the dissertation are convincingly motivated. In the process of writing his dissertation paper, the doctoral candidate viewed in depth the problems researched. The deduction made and the 6 systematized conclusions at the end of the literature review summarize the issue and indicate unresolved problems in the area. This gives the doctoral candidate grounds to formulate - precisely and clearly - the goal of his study.

#### **6. Methodology of research and evaluation of the dissertation paper**

A sufficient number of patients are studied retrospectively, based on well-formulated inclusion and exclusion criteria. The studied patients are divided into 2 groups. The first group consists of 35 patients

with perioperative STEMI undergoing non-cardiac surgery, and the second group is a control group comprising 77 patients with primary coronary intervention in spontaneous STEMI. The selected methodology provides an opportunity to fulfill the goal and tasks set. The material and methods are described in detail and informatively. Standard functional-diagnostic and laboratory methods according to the STEMI protocol are used, as well as a precise assessment of the risk factors and the risk according to the RCRI. A therapeutic protocol is used in accordance with current STEMI behavioral guidelines. There are 5 procedural variables selected for evaluation, as well as well-defined procedural complications. The statistical methods used are adequate and allow appropriate illustration of the results received. The latter are presented consistently, accurately, and convincingly on 57 pages, based on the individual tasks. The illustration uses figures and tables, which are sufficiently informative and well arranged and are not repeated in the text. The results are critically examined, pointing out the shortcomings and limiting conditions of the studies. The discussion is analytical, diverse, and, at the same time, well focused on the main goal and the tasks. The comparative examination of the own results of the author with data published by other authors is extremely valuable. The conclusions drawn by the doctoral candidate (7 in number) are presented concisely, clearly, and precisely, correspond to the goal and tasks set at the beginning of the paper, and specifically reflect the results.

The dissertation paper was independently written by the author and is a meaningful analysis of the scientific and scientific-applied achievements, with certain theoretical and practical contributions and prospects for future development on the topic.

## **7. Contributions to and significance for science and practice**

The dissertation paper, in my opinion, contributes as follows:

It has been the first in our country comparative study with detailed characterization of increased cardiovascular risk, analysis of the specific manifestation, course, therapy (medication and interventional), and outcome (including the results of interventional treatment) in patients with perioperative STEMI compared to spontaneous STEMI.

The Revised Cardiac Risk Index - Lee (RCRI) for emergency surgery has been validated and the constellation of quantitative risk and protective factors influencing the risk of death in patients with perioperative and spontaneous STEMI has been determined.

Of great practical value is the proposed algorithm for assessing the perioperative risk of AMI, for the implementation of hospital logistics by an interdisciplinary team and interventional treatment of patients with acute myocardial infarction after emergency non-cardiac surgery.

### **8. Evaluation of the publications related to the dissertation**

In relation to the dissertation paper, 2 full-text scientific articles and 3 scientific reports presented at national scientific forums were published. In the articles and in all the scientific reports, Dr. Martinov is first author.

No citations in Bulgarian and international magazines have been mentioned. In terms of number and quality, the scientific papers are sufficient for a doctoral degree.

### **9. Personal participation of the doctoral candidate**

I highly appreciate the personal participation of the doctoral candidate in the preparation of the dissertation paper, given the fact that he himself conducted most of the studies and the procedures related to the study, as well as the processing of the results.

### **10. Abstract**

The abstract meets the content of the dissertation paper and the requirements for abstracts. It reflects the main points of the study and includes the most demonstrative figures and tables from the paper. Lists of the publications and participation in scientific forums, as well as the main scientific contributions of the doctoral candidate are also presented.

## **CONCLUSION**

The dissertation paper of Dr. Ivan Martinov contains scientific-applied, theoretical, and applied results, which constitute an original contribution to science and clinical practice and meet all the requirements of the Development of Academic Staff in the Republic of Bulgaria Act, the Regulations for its implementation, and the respective Regulations and specific requirements of N. I. Pirogov University Multi-Profile Hospital for Active Treatment and Emergency Medicine EAD on the terms and conditions for acquiring a doctoral degree.

The dissertation paper shows that the doctoral candidate has in-depth theoretical knowledge and professional skills in the scientific specialty of Cardiology and demonstrates qualities and skills for independent research.

In view of the above, I confidently give my positive assessment of the research presented by the above peer-reviewed dissertation paper, abstract, results, and contributions, and I propose that the esteemed scientific committee award Dr. Ivan Martinov a doctoral degree in Cardiology.

03.05.2021

Author:

(Assoc. Prof. Dr. Maria Tokmakova, MD)